# THE MENOPAUSE

CURRIER

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# THE MENOPAUSE

A CONSIDERATION OF THE
PHENOMENA WHICH OCCUR TO WOMEN
AT THE CLOSE OF THE CHILD-BEARING PERIOD,
WITH INCIDENTAL ALLUSIONS TO THEIR RELATIONSHIP
TO MENSTRUATION. ALSO A PARTICULAR
CONSIDERATION OF THE PREMATURE
(ESPECIALLY THE ARTIFICIAL)
MENOPAUSE

BY

ANDREW F. CURRIER, A. B., M. D.

NEW YORK CITY

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TO

THE MEMORY OF MY DEAR MOTHER,

LONG AT REST,

THIS BOOK IS AFFECTIONATELY

INSCRIBED.

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1897

# PREFACE.

It is many years since an original work on the menopause in the English language has appeared before the public. Tilt's work upon this subject was long the only one of its kind, and was last seen in a reprint published in this country some fifteen years ago. That work may have been useful in its day, but it contained a great deal of statistical information from which, as it seems to the writer of the present work, unwarrantable deductions have been drawn. It also has handed down the hoary tradition, which has been current from time immemorial among both the laity and the profession, that the menopause is an experience fraught with peril and difficulty. This and all similar teaching the writer declares to be incorrect

and unwarrantable in the light of his own experience and observation.

Tilt's book is further defective because the great fund of information which has accumulated in connection with the artificial menopause did not exist in his time.

A translation of a German work on the menopause by Börner was published in this country about the same time as the reprint of Tilt. This work, though very brief, is a decided improvement, in the writer's opinion, upon Tilt. It seems to have grasped the subject in a more philosophical and scientific manner than the work of Tilt, but is deficient, nevertheless, upon certain important phases, a comprehensive study of which has only been possible within the past few years.

The writer would beg leave to say that he has had the subject of this work under consideration many years. He was never able to see the sense nor the logic of the traditional teaching, repeated generation after generation, that the menopause was a serious—yea, even a most dangerous—time and experience; that

the matron and the maid alike should approach it with fear and awe; that if this dangerous Rubicon were once passed, joy and felicity would wait upon the remaining years of life.

If hæmorrhage were exhausting the patient, she was told that if she could only pass the menopause she would be secure, no matter whether the hæmorrhage were due to benign or malignant disease, and if the menopause were suspected, too often the doctor neglected to examine his patient and find out —with assistance, if unable alone—whether the disease *were* benign or malignant, and whether there was good reason for thinking that the menopause could produce a cure. Now, in so far as this condition of opinion exists at the present time, if it does exist, either in the lay or the professional mind, to that extent the writer wishes to lift up his voice in earnest protest. The menopause is *not* a dangerous time or experience for the majority of women, any more than puberty is. The majority of women pass through it

with as little incident or discomfort as they experience at puberty. It is only the exceptional woman who has a hard time, and comes to the doctor to tell him about it. Upon this exceptional experience the doctrine of the danger and serious character of the menopause has been built up.

Another serious error which it is the writer's desire to controvert is the very prevalent one that there is in some way the most intimate relationship between cancer, especially cancer of the womb and the breast, and the menopause. That many cases of malignant disease do occur during the decade in which the menopause usually takes place is true. While this number is probably larger than during any other decade, it by no means includes the greater number of all cases, and it is ridiculously small in its percentage when compared with the total number of women who undergo the experiences of the menopause. Thus the principal props of this threadbare theory of the dangerous character of the menopause are seen to be composed of

the flimsiest material. Let us knock them down and bury the rubbish out of sight and memory.

So far as the writer is aware, little or no attention has been given, in books similar to this one, to the subject of the artificial menopause. The great development of abdominal and pelvic surgery within the past generation, and the enormous number of women, tens of thousands, who have been deprived of their ovaries, for one reason or another, has opened up a rich field for the investigation of the phenomena which attend the removal of those important organs. It is hoped that the writer's contribution to that subject, imperfect as it is, may not be uninteresting to his professional brethren, and may perhaps stimulate some one who may be better qualified to pursue the study more exhaustively.

Concerning the question of the treatment of the ills of the menopause, the writer earnestly hopes that his book may stimulate those into whose hands it may fall, first, to a more careful and systematic investigation of those

ills than has been the usual custom, and, second, to an early resort to surgical measures if surgical measures are indicated. There are many cases which can and should be relieved by such measures, and it is hardly just or scientific or humane to load them down with drugs month after month, in the most empirical fashion, if the condition is one which can be effectually and permanently relieved by the timely resort to surgery.

ANDREW F. CURRIER, M. D.

NEW YORK, *March, 1897.*

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Menopause (wrytis)
If a woman at this age, after stopping menstruating, flows again in one year —
— likely a case of Fibroids or Cancer.
If in two years — almost surely Cancer.

# THE MENOPAUSE.

## CHAPTER I.

### HISTORICAL AND OTHER PRELIMINARY CONSIDERATIONS.

*Definition.*—What do we mean by the term menopause? Obviously the cessation of the menstrual function. But is that all? By no means, for the arrest of the monthly discharge of blood forms but a single incident in the concatenation of events which occur in the experience of a great number of women who reach and pass the limit of the childbearing period.

*Want of Comprehensiveness of the Term.*—The definition which has been given is therefore lacking in comprehensiveness, and specifies only one of the most noteworthy and important facts which occur at an important epoch in a woman's life.

*Substitutes for Term employed and their Ambiguity.*—Should we then substitute for menopause the term change of life, critical time, climacteric, etc., as many writers have done? No, for these terms involve more of ambiguity than does menopause.

The change of life is, with many individuals, quite as definite an event at puberty as at the end of the period which is inaugurated by puberty—nay, in many cases that change is even more definite.

Critical times occur frequently in the lives of some women,* and climacteric merely substitutes a synonym of Greek origin in the place of critical time or period.

*Obsolete Terms.* — Other terms such as dodging time, climacteric disease, etc., have become obsolete for various good reasons, and need only be mentioned.

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* Several periods in the lives of both men and women, and not identical in the two sexes, have been determined by different writers as critical or climacteric periods. See Halford, Medical Transactions, Royal College of Physicians, London, 1813, iv, p. 316; Connolly, Dublin Journal of the Medical Sciences, 1844, xxv, p. 245; O'Connor, ibid., 1875, lx, p. 78.

*The Term Menopause to be employed.*—On the whole, while admitting the narrowness of its etymological scope, the term menopause is as little objectionable as any that is now available, and will therefore be employed in this work to direct the mind of the reader to the events which transpire during those months and years in the life of a woman when the childbearing function is drawing to its close—a period forming an isthmus between growth and decay, a lull between flowing and ebbing tides, a milestone to mark the end of a definite period of existence.

*Relation to Menstruation.*—As the term which has been thus chosen refers definitely to the cessation of an important function, no apology will be deemed necessary for such reference to and consideration of that function as may have a bearing upon the subject in hand; at the same time no attempt will be made to analyze exhaustively the various interesting propositions in histology and physiology with which it is in-

timately related, in which both speculation and fact are abundant, and concerning which there still remains much to be learned.*

*Menstruation defined.* — As a working definition of menstruation it may be said that it is a function common to females of the human species during that portion of life in which fruitfulness is a characteristic. It recurs with tolerable regularity each lunar month and continues the greater portion of a week. Its chief objective feature is a discharge of blood from the uterine canal with which epithelium and glandular secretion from the uterus and vagina are mingled. With the discharge are frequently associated phenomena of considerable variety, appertaining principally to the vascular and nervous systems. From this definition the many ir-

* For the consideration of the subject of menstruation, especially in its histological aspect, the reader is directed to the writings of Leopold, Wyder, Möricke, Kundrat and Engelmann, and John Williams, and for an exhaustive consideration of the function to the *brochure* of Dr. Mary Putnam Jacobi, American Journal of Obstetrics, 1885.

regularities of menstruation which are possible may be deduced.*

*Importance of Menstruation has been observed for Ages.*—From time immemorial the importance of the menstrual function in women has been a recognized fact among critical observers. Its significance has, of course, been differently interpreted by observers in different ages and in different conditions of intellectual development. Among the crude, the barbarous, and the superstitious the solution of such a problem would not be one which would be universally satisfactory. Even among highly developed nations, like the Greeks, the inter-

* "The menstrual flow is due to the influence of the tubo-ovarian (hypogastric) plexus which, in its turn, is controlled by the solar plexus. The uterus, tubes, and ovaries are supplied by the hypogastric plexus, and menstruation must continue as long as the influence of this plexus continues. With the cessation of this influence the flow ceases and atrophy of structure begins. The radiating currents of the ganglionic centers with all their protean reflex actions are the sources of the phenomena of the climacteric. When they are no longer needed for reproductive purposes they expend their force in every conceivable direction."—Nowlin, The Climacteric, its Phenomena and Dangers, Nashville Journal of Medicine and Surgery, 1895, lxxvii, p. 7.

pretation could not be expected to conform to the facts because of imperfect knowledge in physiology and anatomy. And among the observers of recent times, with incorrect and imperfect views of pathology, menstruation and its aberrations must necessarily receive an entirely different interpretation from that which is given them by us who enjoy the accumulation of the knowledge of all previous ages, but more especially the results of the precise investigations of the century which is now drawing to a close.*

The Egyptians, who investigated so many matters concerning the human body, realized that menstruation was an important function. This is shown in the books of Moses, much of the information in which was derived

* For example, Paracelsus believed that the menstrual blood was the greatest of poisons, and that with it the devil produced spiders in the air; also that fleas, beetles, caterpillars, and other insects were generated by it. Democrates in his Book of Antipathy declares that all those caterpillars and other insects which destroy a garden fall off and die if a woman with her menses upon her walk three times around each quarter of the garden barefoot and with her hair loose.

from Egyptian sources, and in which a menstruating woman was declared ceremonially unclean, coitus with her being forbidden, etc.

*The Menopause not carefully observed by most of the Ancient Writers.*—But while the importance of menstruation was quite generally recognized among the more acute of the ancient observers, it was not so with the menopause. By some it was passed over as a matter occult and inexplicable, and, in general, it failed to receive that broad and philosophic treatment with which so many questions were discussed by the ancients. The following selections will show, however, that with some of them the subject had not escaped their attention.

*The Humoral Pathologists.*—The humoral pathologists believed that the humors or juices ascended like gases, and that they often settled in the brain and produced great disorder, which required the abstraction of blood from the head, arm, foot, or other part. In the cessation of the menses, either temporarily or permanently, they saw the possibility

of serious consequences, and they are probably responsible for much of the foreboding of evil which is associated with the menopause in the minds of so many of the laity.*

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* Amid much that is curious in the writings of the humoral pathologists we find it stated by Hoffmann, one of their number, that if venesection is omitted when the menses cease, violent cardialgias will result, accompanied with intense heat and pain about the præcordia, the back, and scapulæ, especially in the nighttime. Others will suffer with intolerable heat, pain in the joints, and erysipelatous fevers, while still others will be affected with nephritic disorders accompanied with pain in the loins, and terminating in calculous concretions. Furthermore, some women, after their sixtieth year, have discharges of bloody urine, or are seized with an immoderate discharge of their menses which at last terminates in an hectic. Some women, especially those who are wasted by prolonged grief, have been afflicted with pain in the left hypochondrium accompanied with uneasiness and heat of the præcordia, which afterward terminates in a violent vomiting of blood or the *morbus niger* of Hippocrates. In such patients upon opening their bodies the spleen has been found preternaturally large and putrid, the *vasa brevia* of the stomach ruptured and gaping, and the blood discharging from these vessels into the ileum.

James, a writer of the early part of the eighteenth century, states that unless women at the menopause are relieved by seasonable venesection or by increasing the evacuations of urine or transpiration, they generally become afflicted with various "chronical" disorders.

Hippocrates, in his work on Diseases of Women, says: "We learn from experience that exulcerations, violent and

*Modern Writers.*—The modern literature of the subject is, of course, of a much less sensational character than the ancient. Its volume is not large when compared with the literature of kindred subjects of a gynæcological character, the latter having increased enormously in recent years. In the first half of this century appeared a number of papers and volumes treating of the menopause, principally by French authors, only two of which are particularly alluded to by Tilt in his well-known work upon this subject.

*Gardanne and Menville.*—One was by Gardanne * and was published in 1861, and the other by Menville,† published in 1840. Tilt's opinion of these works, frankly ex-

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even scirrhous tumors of the uterus, are sometimes produced by cessation of the menses. Neither do the external parts of the body escape the fatal consequences of such suppression, since we know from experience that by this means they are frequently affected with the itch, the elephantiasis, boils, erysipelatous disorders, or scirrhous tumors."

In all this crude material there is the shadow of very important truths.

* Avis aux Femmes entrant dans l'Âge critique.

† Du Temps critique chez les Femmes.

pressed, is that they have little scientific merit. A review of the remaining literature of that period, so far as it was accessible to the author, did not impress him with its importance.

*Tilt.*—Tilt's work, entitled The Change of Life, was for many years the only one upon this subject available for readers of the English language. It contains a vast amount of information very laboriously prepared, but aside from its wealth of statistics it is defective in certain particulars, which are quite essential to the comprehensive treatment of the subject. This is partly for the reason that important data relating to the menopause, especially when artificially produced, were not in existence when the book was written.

*Kisch and Börner.*—Kisch and Börner have each written excellent works upon the menopause in the German language, and an English translation of Börner's work has been published in this country.

The recent developments in pelvic and

abdominal surgery have given new importance to the subject. The fact that the development of pelvic and abdominal surgery has resulted in an abrupt change of the current of life in so many women gives to the study of the menopause and to its phenomena an importance which, previous to this era, they did not have.

Conclusions, which are now possible as the result of experience, could not be drawn by Tilt and his predecessors, and hence the subject is invested with a new interest and is practically placed upon a new foundation.

## Various Data concerning the Menopause.

*Analogue of Menstruation in Animals.*— The menstrual period has its analogue in many of the animals, not that it recurs with the same frequency or regularity as with women, but it is manifested by a congestion of the genital organs, a disturbance of the nervous system, and an impulse which has a very manifest relation to fruitbearing or reproduction.

If coitus and conception do not take place, these conditions of disturbance disappear, to return again after a longer or shorter period. Every one is familiar with such facts as these in the domestic animals.*

*Menopause not regarded in Animals nor in Women of Low Type or Great Physical Development.*—The analogue of the menopause, especially in its aberrations and disturbing elements, is not seen, so far as the author has been able to ascertain, among the animals.

Among those human beings who are least removed from the animals—the savage and the degraded, and among those, too, who are subject to the vicissitudes of out-of-door life and manual labor—the menopause is least likely to excite attention or create disturbance. It is among the highly bred, tenderly

* Such facts have been repeatedly observed in the primates, apes and monkeys, in which the uterus resembles that of women, and also in those animals in which the uterus is hollow—in asses, mares, ewes, sows, bitches, and cats. This observation has been recorded by Buffon, Cuvier, Saint-Hilaire, Ehrenberg, Raciborski, and others.

reared women of civilized life, and among those, too, who have experienced an undue share of the ills and stings of life, that the menopause is a matter of great significance, not infrequently being associated with a general breaking up of the vital forces of the individual.

*Menopause should be a Normal Function or Experience.*—In a healthy and perfectly constructed individual the functions of the body are performed painlessly. With such an individual there is as little consciousness of digestion, or of the very existence of the stomach as a particular organ, as there is of things in general during natural sleep.

The performance of menstruation should be accomplished with equal ease, and the period of its final cessation should be as uneventful as that of its beginning. That this is not the case in many instances is simply to say that there is not an organ or function of the body that does not show derangement and disturbance in one individual or another —indigestion, dysmenorrhœa, disturbed meno-

pause, and a thousand other ills arising, like the miasm from the marshes, according as the conditions favor.

*The Abnormal arouses Attention.*—It is the abnormal in Nature which most impresses itself upon the average mind, not the normal, and the serious disturbances which have happened to some women as they passed through the menopause have led Tilt and others to insist upon its essential seriousness and critical character.

Influenced by such authority, and perhaps by personal observation to a very limited extent, the public at large has come to look upon this experience with great apprehension, and women have been taught that they must never consider themselves quite safe until the menopause is entirely over and passed.

*Past Teaching concerning the Menopause Erroneous in Many Respects.*—Such teaching is mischievous and irrational in the light of present knowledge, and the sooner it is done away with, and the superstitions of the past

respecting it forgotten, the better it will be for humanity.*

*Definition.*—We may define the menopause, therefore, as the condition which exists and the collective phenomena which appear in connection with the cessation of menstruation. This cessation takes place gradually in most cases, the intervals between the menses lengthening, and the latter finally failing altogether, after a period of from one to three or four years. During this time the phenomena are varied in character. With some women there is scarcely any consciousness that anything unusual is occurring, aside from the fact that the intermenstrual intervals are longer than usual. With others the hæmorrhages, if less frequent, are much more pro-

* Larousse (Dictionnaire universelle, article Ménopause) notes the common belief among women that the menopause is accompanied with grave dangers, but he considers this an error, and that its only perturbations are slight disorders of the stomach, blushings and sweatings, vertigo and headache. Sometimes there are in addition pain and heaviness in the uterus, lumbar region, and vulva, violent pulse, dyspnœa, palpitations, hæmorrhages, hæmorrhoids, and occasionally acne.

fuse. The nervous system may be unaffected or there may be disturbance of both cerebro-spinal and sympathetic systems. Vasomotor disturbances are extremely common, and mental disturbances are by no means rare. In cases in which there is predisposition to the development of new growths, such growths may develop at this time.

Atrophic changes take place in all the genital organs as the menopause progresses.

Finally, the menopause may be as uneventful as any of the other necessary experiences to which the female economy is subjected, but it is also susceptible of varying as far as possible in the opposite direction.

## Exaggerated Views concerning the Menopause as a Critical Time for Good or Evil.

We are all more or less in bondage to tradition.

Statements which have been handed along the ages as truth and fact are very often accepted without question until some one with

a probing turn of mind comes along, sifts the story, and perhaps succeeds in proving that it has wandered far from the original—perhaps that there is no foundation truth in it at all.

*Tilt accepts the Ancient View of the Serious Character of the Menopause.*—The notion that the menopause always signifies a serious or critical experience is of respectable antiquity, but we find the ancient statements relating to it overlaid with so much humbug and nonsense that we are compelled to doubt the correctness of the original observations.

Perhaps a few who really suffered at the menopause were observed and generalizations were made from such data. At any rate, the notion has come down to our time and finds in Tilt a stanch supporter.

Suppose we compare the menopause with any of the ordinary functions of the body—with digestion, for example. Errors of digestion are certainly as common and as significant as anything that can be associated with the menopause, and yet we can not con-

sider digestion as critical in any sense, nor its aberrations as necessary adjuncts of the function.

*Misleading Character of Kisch's Statistics.*—How misleading are such statistics as the following, which are taken from Kisch's book,* and which, in many respects, is the best book that has been written upon this subject:

In an analysis of five hundred cases of menopause which came under his observation, the following conditions were noted:

| | |
|---|---|
| Polymenorrhœa or metrorrhagia | 286 |
| Chronic metritis | 79 |
| Leucorrhœa | 327 |
| Prolapsus uteri | 65 |
| Ante- or retroflexion | 52 |
| Pruritus vaginæ or vulvæ | 46 |
| Vaginismus | 12 |
| Carcinoma uteri | 3 |
| Fibroma uteri | 5 |
| Tumor mammæ | 8 |

Three out of every five in these five hundred cases are said to have suffered with uterine hæmorrhage, but whether it was

* Das klimakterisches Alter der Frauen in physiologischer und pathologischer Beziehung, Erlangen, 1874.

sufficient to be significant or serious is not apparent.

*Contrast with the Author's Experience.*— Among those whom the author of these pages has seen professionally in the course of the menopause, in hospital, dispensary, and private practice, who were not suffering with pelvic or abdominal tumors or with some other legitimate cause for hæmorrhage, the number who have suffered with this most loudly heralded bugbear of the menopause has been insignificant. This suggests that the fact should not be overlooked that the great majority of women who survive to old age never consult a physician in regard to the menopause, and that of these nothing is said in tables of statistics, such tables including only those who require the physician's aid.

*Chronic Metritis and Leucorrhœa.*— Chronic metritis is a condition so indefinite in character that the seventy-nine cases in this table may have suffered much or little with it. As a marked accompaniment of the

menopause, the author has had little experience with it. If by this term the condition of endometritis is meant, it would seem to the author that its gravity and importance, not only in relation to the menopause, but in general, had been greatly overestimated in recent years, the profoundly infectious variety being excepted.

Leucorrhœa is also a most indefinite term, and, with the exception of the infectious variety, would not seem to the author a serious complication of the menopause. That three hundred and twenty-seven of the five hundred cases in the table should suffer with it can be easily comprehended, for there are few women, at any period of life, in whom it may not be found, in greater or less degree, if one wishes to find it.

*Displacements of the Uterus.*—That sixty-five should have suffered with prolapsus uteri seems a large percentage—much larger than one would find in American women, especially if the prolapse were considerable.

Whether these figures apply only to mar-

ried and parous women, and whether they include those cases in which the vaginal walls alone were prolapsed and in which the uterus had not descended beyond the vulva, is not apparent. Neither this nor the succeeding three items—ante- and retroflexion, pruritus vaginæ or vulvæ, and vaginismus—can fairly be taken as the basis for any argument specifically directed against the menopause, since they are quite as common, perhaps more so, in the years which precede the menopause.

*Neoplasms.*—With reference to carcinoma uteri and fibroma uteri and tumor mammæ, the number of cases in the table is very small, and yet these are the very conditions which the older writers have dreaded as the particular concomitants of the menopause. If, therefore, it is assumed upon the testimony of this table that the menopause is a dangerous and critical time, we are forced to enter a plea of not proven.

*Tilt's Statistics.*—In Tilt's work on The Change of Life we also find a table in which there are statistics of five hundred cases,

which, he says, were observed in the higher classes, socially, in England in the course of twenty-five years of practice. In addition to such minor complaints as sick headache, biliousness, diarrhœa, deafness, neuralgia, erysipelas, etc., he has tabulated such conditions as the following:

| | |
|---|---|
| Insanity | 16 |
| Paraplegia | 6 |
| Apoplexy and hemiplegia | 6 |
| Fibroma uteri | 4 |
| Carcinoma uteri | 5 |
| Heart disease | 1 |
| Carcinoma mammæ | 1 |

That is, of malignant disease of the genital organs only a fraction over one per cent was noted by this ardent advocate of the serious character of the menopause, while of mental disease there was only a fraction over three per cent. The other complications may be excluded, for it is improbable that they were essentially related to the menopause.

*United States Census Statistics.*—In the vital statistics of the United States census for 1880 there were reported 48,950 deaths

of women between the ages of forty and fifty, out of a total of 4,558,226 women of the respective ages. Of this number there were 1,771 deaths from cancer, about one quarter of them being cases of cancer of the genital organs. That is, less than one per cent of the women who died in the United States from 1870 to 1880 between the ages of forty and fifty, the usual period of the menopause, died from cancer of the genital organs.

*Mortality from Malignant Disease of the Genital Organs during the Menopause.*—Of course, allowance must be made in statistics of this character—which can hardly be expected to have the merit of scientific accuracy—for errors of diagnosis; while, on the other hand, it will also be admitted that no inconsiderable number of cases of these varieties are never reported. But, inasmuch as the percentage of fatal cases is about the same as is recorded in the statistics, it seems fair to conclude that the mortality from malignant disease during the period of the men-

opause does not greatly exceed one per cent. This can not be said to make of the meno. pause a period which should be especially dreaded on this account.

*Neuroses of the Menopause.*—Concerning the neuroses of the menopause there is much to be said, which will appear at a later period in this discussion. It may be remarked, in passing, that Krafft-Ebbing refers seven per cent of cases of insanity in women to disturbance which is associated with the menopause; in Meynert's clinic the climacteric was regarded as an ætiological factor in sixteen out of one hundred and twenty-six paralyzed women.

*Conclusions of Various Writers.*—Of the many who have expressed an opinion at one time or another concerning the various phenomena of the menopause, Tissot, Dewees, Meissner, Saucerotte, Landouzy, and a number of recent American writers deny that they indicate especial gravity as to the condition, while Fothergill, Clarke, Meigs, Bedford, Lisfranc, Boivin, Dupuytren, Velpeau,

and others support Tilt in his contention that they do indicate such gravity.

Tilt modifies his statement, however, by admitting that critical, with reference to the menopause, does not necessarily mean fatal.

*More Extensive Knowledge concerning the Menopause than our Predecessors had leads us to fear it less than they did.*—It is possible that our increased knowledge concerning the phenomena of the menopause, together with our improved methods of treating them, leads us to take the less gloomy view of the situation compared with many of those who have studied the subject in the past.

*Possible Explanation of Degenerative Changes during the Menopause.* — Exaggerated and incorrect as it is believed many of the notions concerning the menopause have been, it is admitted that serious conditions may, and sometimes do, develop in the genital organs at that time. This may be accounted for as follows: When the period of fruitfulness is ended the activity of the tissues

has reached its culmination, the secreting power of the glandular organs begins to diminish, the epithelium becomes less sensitive and less susceptible to infectious influences, and atrophy and degeneration take the place of the active up-building processes.

In the presence of an irritant, scar tissue for example, or that vague condition of susceptibility which we call a diathesis or dyscrasia, tissues which under ordinary conditions of circulation and cell activity might by virtue of abundant vitality be able to resist an increase of irritation, now go down before it, the result being heteroplasia or malignant new growth.

If this explanation be unsatisfactory and lacking in definiteness, it is at least as definite as anything which has thus far been suggested.

*The Menopause not Responsible for Degenerative Changes.* — The fact that malignant disease develops at the time of the menopause does not prove that the menopause is responsible for such development any more

than that some other period of life is responsible when it occurs at some other period. It merely shows that the tissues are then favorable for such a development in the individuals so affected or disposed. Hence we should banish from all future consideration the idea that the menopause is of necessity the time for such unfavorable processes.*

## Physical Condition of Woman when the Era of the Menopause is Reached.

Of course there can be nothing like uniformity in the physical condition of woman as a whole when the period of the menopause is reached, since the conditions surrounding them in the precedent portions of their lives are so varied and different, and yet it has been frequently observed that there are certain peculiar experiences which are common

* The great physiological activity of the uterus is assigned by some writers, among them Braxton Hicks (Medical Times and Gazette, 1877, i, 411), as a predisposing cause for malignant disease. But why should not such a cause be equally potent with other active organs?

to great numbers of them which account fairly well for the similarities which prevail during the menopause.

The age at which the phenomena of the menopause occur will depend upon climate, family or race peculiarities, temperament, social surroundings, previous state of health, etc.

For the majority of women who live in temperate climates like our own, they are manifested in the decade between the fortieth and fiftieth years.

The experiences of the menopause may be classified as—

1. Normal.
2. Moderately troublesome.
3. Severe.
4. Serious.

1. *Normal.*—The normal experiences affect a larger number of women than any of the others, for they pertain to the great multitude who never consult a physician about such matters, and who are scarcely conscious that with the menopause an important func-

tion of life has vanished, being reminded of it chiefly by the fact that menstruation has gradually or suddenly ceased. Their attention may also be drawn to the fact that the outline of the body is undergoing a change, straight lines yielding to curves, and moderate curves to rotundity and obesity.

There are probably few women in this class who do not occasionally experience the vasomotor crises — those commonest of all concomitants of the menopause, which will be referred to with the particular attention which they deserve in the chapter devoted especially to the phenomena of the menopause. While they are frequently a source of the greatest annoyance, they may give no more trouble than a sudden gust of hot wind which vanishes as quickly as it came leaving no trace behind. In most other respects this favored class experiences no particular distinction between the period of time which includes the menopause and that which immediately precedes or immediately follows it. They are in good health, and that means, as

already stated, unconsciousness as to the how and when of the performance of the functions of the body.

2. *Moderately Troublesome.* — Of those with whom the experiences of the menopause are moderately troublesome, the gynæcologist sees many illustrations. The broad distinction which may be made between them and the women of the third class is that their troubles are functional only, while those of the third class are organic. They sometimes remind one of the peculiar conditions presented by women during their first pregnancy. The symptoms pertaining to the nervous system are most prominent— in fact, they probably dominate all others. As the circulatory system is undergoing profound changes we also find considerable visceral disturbance. In general the distinguishing characteristics of this class are irritability of disposition, hysteria, faults of digestion and assimilation, and vasomotor crises.

3. *Severe.* — In the third class of cases there are actual lesions present, some of

which are simply accentuated by the menopause, while others are more or less directly due to it. The digestive disorders, the vasomotor crises and other troubles which were referred to as the sufferings of the second class, may also be present, but they will be overshadowed by the more serious troubles of organic character. Chief among these lesions are those which affect the womb itself, degeneration of the endometrium with increase of the blood tension, resulting in profuse hæmorrhages. Such accidents are especially common in those uteri which are the seat of myomatous enlargement, and may be prolonged through weary years, often wearing the patients out with exhaustion and anæmia. This class also includes those cases in which nervous and mental troubles are prone to culminate in insanity. Heart, kidney, and other visceral diseases, if established when the menopause appears, may take on a serious aspect. Any serious disorder which occurs during the period of the menopause must be carefully investigated with reference

to the bearing which the menopause may have upon it, though this is by no means an admission that serious diseases are peculiarly prone to develop at this time unless the tendency to them pre-existed.

4. *Serious.*—The serious lesions which accompany the menopause, and which tend almost inevitably to a fatal issue, are few in number, and the number of the cases is relatively small. Cancer does not develop simply because menstruation has ceased, or because the period of childbearing is over, but because the vitality of certain tissues is diminished and their ability to resist irritation is greatly lessened. With many women this point of vulnerability is not reached until the menopause has long been passed, but with some, especially with those who have borne many children or have experienced much trouble and privation, it is present during the decade in which the menopause usually occurs, and in such cases malignant degeneration is the result.

The following table of cases from the

records of the New York Skin and Cancer Hospital, the patients being taken from the humbler and hard-working class of our community, shows a predominance for the decade from forty to fifty. The number of cases is of course too small for general deductions.

| Nativity. | Age. | Organ. | Social condition. | Children. | Miscarriages. |
|---|---|---|---|---|---|
| Ireland (49)..... | 30–40= 9<br>40–50=21<br>50–60=11<br>60–70= 7<br>80= 1 | Uterus. | Married, 44; single, 5. | 193<br>Average (for married), 5. | 21 |
| United States (36). | 20–30= 5<br>30–40= 9<br>40–50=13<br>50–60= 6<br>60–70= 3 | .... | Married, 34; single, 2. | 126<br>Average, 4. | 40 |
| Germany (32)... | 20–30= 1<br>30–40= 5<br>40–50=13<br>50–60= 9<br>60–70= 4 | .... | Married, 32. | 97<br>Average, 3. | 15 |
| England (4)..... | 20–30= 1<br>30–40= 1<br>40–50= 2 | .... | Married, 4. | 10<br>Average, 2½. | 0 |
| Scotland (3)..... | 30–40= 1<br>40–50= 1<br>60–70= 1 | .... | Married, 3. | 4 | 0 |
| France (2)..... | 20–30= 1<br>60–70= 1 | .... | Married, 2. | 2 | 0 |
| Canada (1)..... | 50–60= 1 | .... | Married, 1. | 5 | 2 |
| Wales (1)..... | 50–60= 1 | .... | Married, 1. | 6 | 0 |
| Italy (1)..... | 50–60= 1 | .... | Married, 1. | 3 | 0 |
| Poland (1)..... | 30–40= 1 | .... | Married, 1. | 1 | 1 |
| Sweden (1)..... | 60–70= 1 | .... | Married, 1. | 2 | 0 |
| Total..... | 131 | | | | |

Of these one hundred and thirty-one cases cases the totals by decades are as follows:

| Decade. | No. of cases. |
|---|---|
| 20–30 | 8 |
| 30–40 | 26 |
| 40–50 | 50 |
| 50–60 | 29 |
| 60–70 | 17 |
| 80 | 1 |
| | 131 |

According to this table, therefore, five thirteenths of these cases developed cancer in the decade during which the menopause usually occurs. Of other forms of cancer in women the same records show the following:

| Age. | Organ. | Social condition. | Children. | Miscarriages. |
|---|---|---|---|---|
| Under 20, 1 | Breast, 47 | Married, 46 | 145 | 9 |
| 20–30, 2 | Rectum, 3 | Single, 10 | Average, 3$\frac{1}{7}$. | |
| 30–40, 8 | Vulva, 5 | Not known, 5 | | |
| 40–50, 18 | Clitoris, 1 | | | |
| 50–60, 12 | Abdominal wall, 1 | | | |
| 60–70, 15 | Liver, 1 | | | |
| 70–80, 5 | General sarcoma, 1 | | | |
| | Unclassified, 2 | | | |
| 61 | 61 | 61 | | |

Of the entire number of cases of malignant disease, one hundred and ninety-two, it will be seen that sixty-eight occurred in the decade forty to fifty—that is, slightly more

than one-third of all cases. Let us now consider the distribution of the various classes or types of women in accordance with the experiences which they encounter during the menopause, the classification being the same, of course, which has already been followed.

1. *Normal.*—All that tends to develop and strengthen the physical part of woman—to render her insensitive to the ordinary ills of life, to make her forgetful of self—is favorable to a normal menopause. Races and nations which are phlegmatic, cold, and apathetic, women who are inured to out-of-door life and severe manual labor, savage and barbarous women, peasants, Germans, Scandinavians, and Russians, are apt to complain little of the experiences of the menopause; while the sensitive, passionate nations, like the French, Spanish, and Irish, the highly organized, nervous, city-bred women, women of fashion, women who fret and worry, are apt to experience the disagreeable and annoying features of the menopause. A study of the sexual peculiarities of the American-Indian

women failed to reveal any noteworthy experience during the menopause, and, according to Dr. Frederic Cook, who has studied the same peculiarities among the Eskimos, the same may be said of them.

Among the French and Irish the troubles which are now under consideration are exceedingly common, which proves the statement that climate and race peculiarities have a modifying influence upon the menopause.

2. *Moderately Troublesome.*—The number of women who belong to this class is very large. It includes women who have had a stormy menstrual life, who have suffered much with dysmenorrhœa, who have suffered much with anæmia, headache, and constipation. It also includes women who have been addicted to venereal excesses, who have had frequent abortions, whose nervous systems have suffered frequent shocks, who have had great disappointments, whose lives have been a constant worry and unrest; also women who have undergone privation, overwork, and exposure of various kinds. Among

them will be found many shopwomen, prostitutes, women of fashion, women who bring up large families of children on very slender incomes, women who are hysterical and with whom the affairs of life are constantly going wrong, wives of farmers and mechanics who are frequently troubled to make ends meet.

3. *Severe.*—This class is smaller than the preceding one, but includes, nevertheless, many well-marked cases. It includes many highly wrought, nervous women, and has as its two chief types, as has already been remarked, those who suffer from profuse hæmorrhages and those who develop profound nervous and mental troubles. The hæmorrhages may be due simply to a diseased and degenerating endometrium, or to the presence of fibroid tumors within the uterus. If from the latter, the phenomena of the menopause, including the hæmorrhages, may be prolonged through many years, atrophy finally taking place if the woman has sufficient vitality to endure the prolonged drain upon it. With the women of the other type the con-

stant irritation of the nervous system finally culminates in insanity, melancholia or mania appearing according to the temperament and disposition of the individual. Insanity of this form may be permanent, because it may be dependent upon degenerative conditions of the nerve substance. Of course there are many cases in which ultimate recovery is possible and does occur. Women who are already the subjects of visceral disease of the heart, liver, kidneys, lungs, stomach, etc., when the menopause arrives may have their symptoms intensified by the additional disturbance which a troublesome menopause brings.

4. *Serious.*—This class includes those who are already foredoomed by an existing or impending serious condition, to which the processes which accompany the menopause can add, or from which they can take away, but little. The hæmorrhage and destruction of tissue and sepsis in such cases are not essentially due to the menopause, for precisely the same symptoms occur when the same dis-

ease happens early in life, or long after the menopause has ended. The cause must be sought elsewhere, and, when it is found, it will be found to be the same for all ages and periods of life.

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## CHAPTER II.

CONSIDERATIONS CONCERNING THE ORGANS OF THE GENITAL APPARATUS — ANATOMICAL CHANGES EFFECTED BY THE MENOPAUSE.

*Menopause indicates Completion of Fruitful Period.*—The menopause is the signal that fruition is ended. In the vegetable world the period of fruition is followed by decided and perceptible structural changes. Foliage assumes its most brilliant colors, then falls and withers. Analogous changes occur in women with the period of the menopause, and subsequently the hair whitens, the figure becomes rotund, but in due course of time withering and wrinkles follow. In the reproductive organs the advent of the menopause means the beginning of senility, and that signifies atrophy and degeneration of structure, and sometimes, though not necessarily, the institution of morbid processes.

The subject will be studied from the following standpoints:

*Classification.*—1. Anatomical changes which are the result of the menopause.

2. Anatomical changes which produce the menopause.

3. Anatomical changes which are coincidental with the menopause, but which are not usually its cause or caused by it.

Necessarily, the organs of the reproductive apparatus must be considered in detail.

### Anatomical Changes in the Ovaries.

The ovaries are, to a very decided degree, the center of the reproductive apparatus in women—the *sine qua non* in the continuation of species. Their function is ovulation—the development and extrusion of ova—and their intimate nervous relations with other viscera doubtless explain the many curious phenomena which are observable in connection with menstruation and its discontinuance.

Ovulation may continue after the menses

have ceased. The proof of this is that pregnancy sometimes takes place after the menopause has occurred.*

After ovulation ceases the work of the ovaries is accomplished, and unless some morbid change takes place in them, they become shriveled and atrophied. The anatomical changes in the ovaries during and after the menopause have been very clearly and satisfactorily described in a paper published by the late Prof. J. C. Dalton in the Transactions of the American Gynæcological Society, vol. ii, 1877.† From that report the following cases, in a condensed form, have been taken:

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* Puech, Renaudier, Kisch, Krieger, and Deshayes have all reported cases of this character. A number of such cases have been brought to the attention of the author. Among them was one who was the mother of a medical colleague, who gave birth to a son several years after she had passed the menopause. Another was a case in which a child was born fourteen years after the cessation of menstruation.

Piron (Lancet, ii, 1862, p. 27) observed a regular monthly flow for six months in a woman seventy-two years of age. She then became pregnant, but aborted at the second month, the fœtus being recovered.

† Report on the Corpus Luteum.

I. Married woman, forty-eight years of age, mother of seven children, died one day after the end of a menstrual period. Menstruation had always been regular and painless. One of the ovaries contained a superficial Graafian follicle considerably enlarged and filled with a fresh, dark-red blood clot. Both ovaries exhibited alteration of structure corresponding with the patient's age and the near approach of the menopause. There were few healthy, active, Graafian follicles; some were morbidly distended, others were shriveled. Each ovary contained two unruptured follicles which had undergone chronic degeneration, the walls being thickened and the contents absorbed, forming false corpora lutea.

II. A widow, thirty-three years of age, who died from phthisis pulmonalis. Last pregnancy at twenty; menstruation irregular for a year; last period six months prior to death. Ovaries small, surrounded with old adhesions; albuginea white and opaque. Small rounded projection near one end of

right ovary, brownish in color. It contained an ovoidal body three to four millimeters in its long diameter, having the structure of a retrograde corpus luteum of menstruation. Its wall was convoluted half a millimeter in thickness, its color white; it contained brownish gelatinous material. A similar smaller body was at the opposite end of the same ovary. The left ovary contained a very thin, shriveled white-walled sac, connected with a superficial cicatrix and containing black coloring matter. In both ovaries there were collapsed, empty, degenerate Graafian follicles, not connected with the surface, but scattered through the tissue of the organs.

III. Prostitute, thirty years of age, death from waxy degeneration of the kidneys and disease of the liver. Menstruation had ceased eight months prior to death. Both ovaries enveloped in old adhesions, their substance being condensed and atrophied. In one there were a few brownish or yellowish streaks without definite structure. Neither

contained healthy Graafian follicles or corpora lutea.

IV. Prostitute, twenty-one years of age, death from cardiac disease and pulmonary œdema; last menstruation ten months prior to death. Ovaries small, but free from adhesions, their tissue abnormally dense and containing a few small Graafian follicles but no corpora lutea.

V. Woman, forty-three years of age, who had had one child twenty-one years previously. Death from cerebral meningitis. Last menstruation a year prior to death. Ovaries small and loose in texture, containing collapsed, empty, degenerate Graafian follicles, with slightly thickened walls, which had long been inactive. In the ovarian tissue were a few small blackish stains without definite structure. No normal Graafian follicles nor corpora lutea.

VI. Woman, fifty-five years of age, multipara, death from abscess of the liver and pneumonia. Last menstruation six years prior to death. One ovary weighed one

gramme, the other less than one gramme and a half. The external surface was opaque, yellowish white, with numerous depressed curvilinear cicatrices. Internally the color was a pale red, the consistency firm, and there were neither Graafian follicles nor corpora lutea. The entire substance consisted of a moderately vascular connective tissue.

VII. Woman, forty-five years of age, the mother of fourteen children. Death from rupture of thoracic aneurism. Menstruated once during last year of life. Ovaries under the average size, white and opaque externally, with depressed, intercommunicating cicatrices, beneath which were small colored clots, with and without membranous walls, flattened from within outward. The ovaries contained four or five small Graafian follicles, visible externally; also two large ones beneath the albuginea, which had collapsed after their contents had been reabsorbed. Their walls were friable. Several other follicles had thickened walls, and were collapsed and empty. There were no corpora lutea.

VIII. Woman, seventy years of age, multipara. Ovaries half the normal size. They were lobular internally, and contained collapsed Graafian follicles in the form of closed empty sacs (saccular degeneration), with firm, pale, thickened, and puckered walls. The sacs were enucleated, and the interspaces showed loose red connective tissue. No healthy Graafian follicles nor other structural formations.

*Analysis of the Foregoing Cases.*—An analysis of these most interesting cases gives the following results, which may be considered an *ensemble* of the ovarian changes which the menopause implies: In women who reach the menopause prematurely from wasting diseases, such as pulmonary phthisis (case II), from amyloid disease (III), from cardiac disease (IV), the ovaries may be reduced to half the size they usually reach during functional activity. They may be surrounded by evidences of previous inflammatory condition, or such evidences may be wanting. They may be converted into

masses consisting chiefly of connective tissue, or there may still be more or less ovarian stroma remaining, with more or fewer Graafian follicles and corpora lutea in varying stages of degeneration, according to the nearness or remoteness of the time when functional activity ceased, or the degree of malnutrition of the body in general, and the pelvic organs in particular. It is not improbable that similar changes would be found in the ovaries of those who reach the menopause prematurely from causes other than wasting diseases, as from great obesity, frequent pregnancies in quick succession, and the traumatic conditions.

2. In women who reach the menopause at the normal period the ovaries, if examined while the change is in progress or soon after it is completed, may show little reduction in size. There may be evidences of pre-existent disease in the form of bands and adhesions. Some ovarian stroma may still be present, but there will be an abundant formation of connective tissue. The Graafian follicles and

corpora lutea will, as a rule, be fewer and less distinct than in ovaries which are in active functional condition.

3. In women in whom the menopause has long been passed, the ovaries may be shriveled to a quarter or even a fifth of their average size (Dalton). They will be composed mostly of connective tissue, but the scars of corpora lutea may usually be found upon or within them, and there may be saccular degeneration of Graafian follicles which have long since become inactive, the latter representing a peculiar phase of atrophy which may or may not be of any pathological significance.

Kisch, in the work to which reference has been made, coincides with the statements which were made by Dalton. He also observed that the connective-tissue changes in ovaries during and after the menopause were from the periphery to the center, the epithelial elements being thus gradually compressed. In the Graafian follicles the first retrograde change is fatty degeneration with

the formation of a granular detritus. While the membrana propria of the follicle is still unchanged, quantities of round fat drops may be found in the granulation layer, together with unchanged cells of that layer, and also ovum cells. These constantly increase, so that finally none of the cell contents remain, the follicle containing only granular matter and fluid. The tunica propria then becomes oval, long, or angular. In a subsequent stage the Graafian follicle becomes a bladder-like body, oblong, with many folds, continuing to contract, and being filled with a transparent fluid, round cells, and an intercellular substance. It is finally converted into a long, oval, fibroid mass, which is connected with the surrounding stroma by thick fibrils, and the cavity is reduced to a bare cleft without appreciable contents. As the tunica albuginea thickens, the opening of matured follicles is prevented, and Kisch believes that this causes the irregularity and difficulty of menstruation at this period with pain, hysteria, etc.

Among the other writers who may be profitably consulted with reference to the anatomical changes produced by the menopause are Börner, Puech, Kiwisch, Waldeyer, Hegar, and Strojnowski.

Puech found the ovaries nearly normal in size in a woman who had passed the menopause three years previous to the operation in which he removed them, and Kiwisch and Waldeyer also describe the atrophic process as a very slow one.

Hegar and Krieger assert, in addition, that atrophy of the ovaries precedes atrophy of the uterus, owing to the arrest of the reproductive power before complete cessation of the menses. Of course this process is subject to exceptions.

Strojnowski reports eleven cases in which atrophy of the ovaries was due to diabetes.*

We may therefore assert that the anatomical changes in the ovaries at and after the menopause are atrophic in character, and usually take place slowly. The epithelial

* See Satellite, January, 1892, p. 93.

elements gradually give place to connective tissue, the Graafian follicles and corpora lutea are completely destroyed, or the only evidence that they ever existed consists in a few scars upon the tunica albuginea, which becomes thick and shriveled.

The nerve and vascular supply is diminished or cut off, and the same is true concerning the lymphatic supply. With regard to the latter, His and Slavjansky assert its abundant distribution to the ovaries, while Exner and Buckel deny it.*

Thus the imperious influence of these organs upon the body at large is brought to an end.

### Anatomical Changes in the Uterus.

Changes in the uterus are also induced by the menopause, and it will be convenient again to invoke the work of Dalton already impressed into service, for testimony upon this portion of the subject. The numbers of

* See article Ovary in Reference Handbook of the Medical Sciences.

the cases are the same as were used in the remarks concerning the ovaries.

II. Widow, thirty-three years of age, who died of pulmonary phthisis. The uterus was empty and normal in appearance. Its mucous membrane was pale throughout.

III. Prostitute, thirty years of age, who died of waxy degeneration of the kidneys and disease of the liver. Uterus empty and of small size, mucous membrane pale and smooth.

IV. Prostitute, twenty-one years of age, who died of cardiac disease and pulmonary œdema. Uterus small and empty. Mucous membrane of cervix pale; that of the body very thin, but reddened with an uniform fine vascularity.

V. Woman, forty-three years of age, who died from cerebral meningitis. Uterus empty, of medium size, and normal in appearance, with the exception of a constriction at the os internum. The mucous membrane was smooth and pale, marked only with a slight arborization of fine vessels.

VI. Woman, fifty-five years of age, who died from abscess of the liver and pneumonia. Uterus small and empty, and mucous membrane pale throughout. It contained a small fibrous tumor in its posterior wall.

VII. Woman, forty-five years of age, who died from thoracic aneurism. Uterus large, but empty, and normal in appearance. Mucous membrane pale except for a rosy tint near the fundus.

VIII. Woman, seventy years of age. Uterus healthy except for a small fibrous tumor in one of its walls; also thickening and reddening of the adjacent mucous membrane.

The findings concerning the uterus in the foregoing cases are meager, but show sufficiently that with the menopause comes impaired nutrition and reduction in volume, except in cases in which the uterus is the seat of a neoplasm, when it may retain its large size indefinitely.

The author is prepared to verify the statements of Dalton upon the basis of numerous

operations upon old women from whom, for one cause and another, the uterus has been removed. The fact that the endometrial mucous membrane was not uniformly anæmic in Dalton's cases, as well as the condition of the ovaries in these cases, confirms Hegar's statement that the ovaries atrophy prior to the atrophy of the uterus. Indeed, many observers have noticed that in the early stages of the menopause congestion of the uterine mucous membrane and enlargement of the organ are of common occurrence.

Thomas asserts * that the contraction and atrophy of the cervix take place more rapidly than do the similar processes in the corpus uteri. Such a process may be followed by atresia and stenosis of the cervical canal while the glands of the endometrium are still pouring out their secretion. This may result in retention of secretions, in degeneration, in hæmorrhage, etc. Such an explanation will fit a certain number of cases, but not all; indeed the author believes that in many cases

* Annals of Gynæcology and Pædiatry, 1891, iv, p. 449.

degeneration of the cervix and of the corpus proceed *pari passu.* In married women with whom sexual intercourse is of frequent occurrence it is not unlikely that the corpus atrophies more rapidly than the cervix.

Kisch * observed that the vaginal portion of the cervix was usually soft during the menopause, eroded, and easily provoked to hæmorrhage; also that the entire organ was rather soft and relaxed with evidences of stasis in the vena cava ascendens, the pelvic vessels, and those of the uterine walls and mucous membrane. He had also not infrequently observed hydrometra as the result of stenosis of the cervical canal and the retention of secretions; also prolapsus and displacements of the uterus, of which the latter conditions may be less disturbing during the menopause than during the childbearing period.

With respect to the foregoing opinions of Kisch, the author begs leave to say that in his experience prolapsus uteri is not a result

* *Op. cit.*

of the menopause; in fact, so far as the uterus itself is concerned, when it is not the seat of an inflammatory or neoplastic process, the atrophy which it undergoes, with diminution in size and weight, would of course tend to check rather than to exaggerate a condition of prolapse.

Klob, whose work on the anatomy and pathology of the uterus performed valuable pioneer service,* regarded the changes induced in the organ by the menopause as analogous with those in the ovaries, the muscular fibers, especially those which are in the fundus and corpus being finally reduced to connective tissue.

*Classification of Uteri.*—The author's investigation of a large number of cases in which the uterus was undergoing the changes of the menopause, would lead him to divide such cases into the following classes:

1. Those in which the menopause is progressing.

* See translation by Kammerer and Dawson, 1868, p. 222.

2. Those in which it has taken place at the customary time as a natural process.

3. Those in which it has taken place prematurely.

4. Those in which the interval of time which has elapsed since it occurred has been very long.

In the first class there is either no perceptible anatomical change, or there is the congestion, the hypertrophy, the granulations of the endometrium, with enlargement of the organ and the occasional profuse hæmorrhages which are incidental. Frequently there is also excessive discharge from the overstimulated uterine glands, but seldom an inflammatory process.

In the second class, two years or more having intervened since the last menstruation, atrophy of the tissues of the uterus is well marked. The mucous membrane is pale and less sensitive than formerly, except at the fundus, and sometimes at the os internum, where sensitiveness continues acute. The entire organ is reduced in size, the reduction

in the portio vaginalis being particularly marked. Glandular discharge is usually insignificant, the atrophic process having now involved the glands as well as the other tissues.

In the third class the changes are not materially different from those of the second. It has seemed to the author that the entire process of atrophy moved on more rapidly when the menopause was induced abruptly by the removal of the ovaries than under natural conditions, more rapidly also than in those cases in which obesity or excessive childbearing had been the cause.

In the obesity cases there is more or less deposit or infiltration of fat, or fatty degeneration of the muscular tissue of the uterus, so that it may seem even larger than under normal conditions.

In the fourth class the uterus is, as a rule, insignificant in size, the portio vaginalis may be shriveled to a mere buttonlike projection or may be reduced to a mere slit in the anterior vaginal wall. The corpus also may be

no larger than a pigeon's egg. In a few cases the author has been unable to find anything that could suggest the former existence of a parous organ, so completely had atrophy performed its work. On the other hand, even in extreme age the organ has been found several inches in length, its nutrition being continued by the neoplasms within its structure. A condition of extension, and even hypertrophy, may also accompany prolapsus when the vagina and other natural supports are no longer able to hold it in its proper place. Posterior displacements of the uterus do not retard the atrophic process unless the circulatory disturbance is considerable. Extensive venous stasis means increased nutrition. In general, with virgins and widows who are continent, uterine atrophy is more complete and more prompt than with married women. Of glandular discharge from the uterus there is usually none, the glands having become quite functionless or perhaps having disappeared entirely.

*Anatomical Changes in the Fallopian Tubes, Vagina, and Clitoris.*—The uterus and ovaries are not the only organs in which the degenerative changes which have been depicted occur. Such changes will also be observed in the other members of the genital apparatus—nay more, in portions of the body with which the genital apparatus has no immediate association.

The Fallopian tubes shrink and shorten, the fimbriated ends gradually disappear, and the organs are reduced to mere hardened strings of connective tissue, deficient in vascularity, functionless. The preliminary changes in the vagina may be hyperæmia, increased glandular secretion and increased sensitiveness. The congestion may be an element in that general congestion of the pelvic tissues which no longer has expression and outlet in the customary monthly flow. Hyperæmia is succeeded by contraction of the vessels and anæmia; the mucous membrane loses its rugæ, becomes smooth and pale; the vaginal tube is shortened, the vault contracted, and bands of

connective tissue may be stretched across the latter or adhesions formed in other portions of the vaginal tube. The introitus undergoes narrowing, especially in virgins and nulliparæ; it is sometimes so narrow that it will scarcely admit the examining finger, while the tube is shortened to a length of not more than an inch or two. The vaginal glands often secrete an acrid muco-purulent substance which causes the most intense pruritus of the tissues which may be soiled by it. Not infrequently the relaxation of the vaginal tissues is followed by prolapse of one or both vaginal walls, and the uterus, bladder, or rectum, or all together, may be included in the descent. This happens especially with women in whom the vagina is voluminous, who have borne many children, and with whom the structures which usually act as supports and barriers for these organs have weakened or given way. Atrophy of the clitoris and external genitals also occurs, the hair upon the labia becomes thin and scraggy, the cushion of fat in the labia majora and mons veneris

shrinks, the vulva becomes wrinkled, the labia minora contract, and in some cases disappear entirely. The clitoris also ceases to become sensitive or congested, and returns to a rudimentary, permanently inactive condition.

Coitus with those who have undergone these senile changes is not only very painful (to the women) in many cases, but may be followed by certain neuroses and psychoses to which women at this period of life are very susceptible.*

*Anatomical Changes in the Mammary Glands.*—The mammary glands share in the atrophic process of the remainder of the genital apparatus, they and the milk ducts shrinking to rudimentary conditions. Hardening of ducts and glands often leads to the suspicion of disease, and many breasts have

* In a case which occurred in the author's practice a woman of forty-five, who passed the menopause at thirty-nine, suffered with mental disturbance which was most marked after the sexual approaches of a brutal husband. He succeeded in having her committed to a lunatic asylum, where she soon recovered, the cause of her trouble having been removed.

fallen a sacrifice to the knife when the cause of the trouble was purely a physiological one. This being a matter of actual knowledge and experience, the author would insist upon the necessity of differentiating a physiological from a diseased condition. The fat of the breasts is, in most cases, gradually absorbed, the nipple shrinks, and the breasts become wrinkled, skinny, and no longer objects of beauty and symmetry. Not a few women, however, retain the beauty of outline of these structures to extreme age, though the general appearance is not and can not be that of the breasts of the presenile period. Previous to the occurrence of atrophy there may also be a period of congestion and irritation in the breasts. Tilt has observed such a condition fourteen times in the five hundred cases of menopause which he has tabulated and analyzed. In the cases in question the breasts were swollen and painful, the nipples were sore, and occasionally they exuded a milky or glutinous fluid. This condition of congestion not infrequently gives rise to the sus-

picion of pregnancy, at least in the mind of the individual who suffers. It is always a condition which calls for careful inspection and treatment.

*Changes in other Structures of the Body.*—It may not be amiss to note that not in the generative organs alone do degenerative changes take place at the period of the menopause. The hair changes its color, loses the glossiness of youth, perhaps falls out; the teeth decay and loosen in their sockets, the skin becomes wrinkled and flabby, the spleen, the lymphatics, Peyer's patches, and probably other structures, tell but too plainly that the progressive period of life is over, that degeneration now controls.

### (2.) Anatomical Changes in the Genital Organs which lead to the Menopause.

The various organs and their morbid conditions will be considered in the same manner as in the preceding section.

*The Ovaries and Fallopian Tubes.*—The changes to which the ovaries are subject

which have an ætiological bearing upon the menopause are very numerous indeed. No one who has paid even the most superficial attention to the pathology of the pelvic organs in women can have failed to note the astonishing frequency and variety of diseases which destroy the tissues of the ovaries, interfere with their function, and maintain a necessary and intimate connection with the menopause. This does not mean that menstruation stops or even is irregular in all cases in which ovarian disease is present, for all gynæcologists, indeed almost all physicians who are carefully observant, are familiar with cases in which that function is performed with the utmost regularity in the presence of most extensive disease of such a character.

Hence Hegar is not entirely correct in asserting that menstruation depends on the functional activity of the ovaries, and that amenorrhœa is the usual result of pathological conditions causing complete degeneration of both ovaries. He is partly correct in his statement that exceptions are due to per-

sisting healthy parenchyma which may be included in the pedicle of an ovarian tumor, the tumor having been removed, and to collateral fluxion and stasis. There is an additional element of nerve influence in such cases, to which attention has been called by Arthur Johnstone, and to which reference may be made in the subsequent course of this discussion.*

The chief forms of disease to which allusion has been made in the foregoing portions of this section consist of neoplasms, to which the ovary is extremely susceptible. Such growths include fibroma, sarcoma, carcinoma, tubercle, and the large family of cystomata,

* Holst reports a case, quoted by Börner (*op. cit.*), in which pregnancy occurred, the patient dying before term, and in which both ovaries had undergone complete degeneration, one of them being the seat of malignant disease.

Korn reports a case in which a woman fifty-three years of age had always menstruated regularly, and when seen by him both ovaries were the seat of malignant disease.

In J. Williams's case pregnancy occurred subsequent to the removal of the left ovary. The case proceeded to term, and during labor it became necessary to remove the remaining ovary which had become the seat of cystic disease.

The author has operated in a number of instances in which menstruation had been uninterrupted and in which

though, as already stated, numerous cases of undisturbed menstruation are recorded in which the ovaries have been found entirely degenerated and disorganized by such disease.

Anatomical changes in the tubes interfering with menstruation are frequently associated with the changes which have been mentioned as affecting the ovaries. Changes of an inflammatory character are more frequent in these structures than are the neoplastic. Degenerative or inflammatory processes, if limited to the tubes, would rarely repress menstruation or induce the menopause.

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the ovarian stroma had entirely disappeared. Indeed such cases could be multiplied.

Slavjansky's well-known investigations concerning parenchymatous and interstitial oöphoritis are interesting and instructive in this connection.

At the last meeting (1896) of the American Gynæcological Society cases were reported by Sutton, Gordon, and others in which not only menstruation but pregnancy and labor at term seemed to follow the removal of both ovaries. This must mean either imperfect operations, supernumerary ovaries, or transmission of ova to the uterus in a way which is not clearly explicable, and in addition independence of menstruation in so far as the integrity of the ovaries is concerned.

Their integrity is not essential to the continuance of menstruation.

*The Peritoneum.*—In the inflammatory and neoplastic derangements of the peritoneum, the influence, with reference to the menopause, is probably always or nearly always indirect—that is, the pressure which a tumor or a mass of contracting exudate, or a collection of peritoneal fluid of whatever nature, exerts upon the ovaries, tubes, or uterus may interfere with the circulation of these organs, and impair their nutrition to such a degree as to induce the menopause, and the same is true with regard to tumors developing from any of the abdominal viscera.*

*The Uterus.* — Numerous are the anatomical changes in the uterus which result in the menopause. They may be of an inflammatory character, involving the perimetrium or parametrium, though such disturb-

* This interjection, though somewhat wide of the subject which is immediately under consideration, has a bearing which, it is believed, will be readily appreciated.

ances often end in resolution. Should they terminate in abscess, not only is the effect upon the vital forces in general severe and exhausting on account of the sepsis and various complications with the abdominal viscera which are excited, but they are also quite likely to terminate in cessation of the menstrual function.

Anatomical changes in the uterine mucous membrane of an inflammatory character may be due to infection or traumatism, the latter resulting from parturition, the use of caustics, or other injuries unconnected with pregnancy or parturition, the former arising from the poison of various infectious diseases which may attack the uterus, and including syphilis, gonorrhœa, measles, diphtheria, typhoid fever, or cholera. The inflammation in such cases is followed by contraction and atresia, the function of the uterine mucous membrane being abolished, the ovaries participating in the process, and the menopause resulting. Amyloid disease affecting the uterus may also interfere with menstruation

and induce the menopause. This form of disease is, however, a very rare one, only one reported case having been found in literature. This was reported long ago by Virchow.*

Fatty degeneration or infiltration of the uterus apart from a general development of fatty tissue may also occur, and have a detrimental action upon the menstrual function. This subject has recently been studied by Sänger † with reference to the puerperal uterus, and in previous years by Andral, Bureau, Heschl, Simpson, Kölliker, Rokitansky, and others.

Klob ‡ regards fatty degeneration of the uterus as of two varieties, (1) post-puerperal and (2) that form which is due to a morbid condition of the arteries of the uterus with ischæmia, the arteries being first rigid, their nutrition being impaired, and fatty degeneration following.

Fatty degeneration of the uterus may also proceed from tuberculosis or from embolism.

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* Klob, *op. cit.*

† Annals of Gynæcology, July, 1888.

‡ *Op. cit.*, p. 255.

It begins from within and works outward, and as it progresses the ovaries and oviducts shrivel. The menopause necessarily follows. As to the influence of the neoplasms of the uterus upon the menopause, the myomata, if subperitoneal, frequently seem to be unimportant in this particular, excepting in those cases in which, owing to their size or their peculiar situation, atrophy is caused by their pressure. The nutrient elements in such cases go to the tumor rather than to the uterus, which accordingly may suffer reduction in its dimensions. Frequently in such cases the menopause is long delayed. With the intramural growths menstruation is usually profuse, especially in those cases in which the tumors are implanted in the area of greatest vascularity of the organ—that is, near the entrance into the uterus of the uterine arteries. With the mucous and submucous growths the conditions are also favorable to great outpourings of blood. It is in uterine disease of the varieties just mentioned that women look with greatest longing and hope

for relief with the menopause, a hope and longing which are often delusive and just ahead of one's grasp. Who has not seen women with such disease broken down and anæmic, prematurely old, dying with the menopause still deferred? Should the menopause come prematurely, as it sometimes does in such cases, it is usually for the reason that the vital forces are exhausted, the flow ceasing, as it does with other wasting processes, simply because the *vis naturæ* has given out.

With adenomata of the uterus, the increased nutrition which their presence implies necessitates an experience similar to that which obtains with intramural myomata. In cases in which they do not assume a malignant character (though some writers insist that they are invariably malignant) there is no reason for supposing that they have any tendency to favorably influence the menopause.

In the very large majority of cases of uterine disease it is the involvement of the

ovaries which checks the menstrual flow, if it is checked. Even cases in which the uterus has been removed, the ovaries being retained, have in some instances continued their menstrual history without interruption, the blood escaping through the ruptured capillaries of the vaginal scar, or by the mucous membrane of the rectum, nose, or mouth, or appearing as stigmata upon the surface of the body. Atresia and stenosis of the uterine canal will, of course, prevent the escape of fluid by that channel, but if the ovaries continue to functionate and the nexus in the pelvis, whatever it may be, continues undivided and undestroyed, menstruation or its substitute will continue in one form or another.

*The Vagina.*—The influence which inflammations and new growths of the vagina and external genitals have upon the menopause is necessarily indirect, the effect being produced through the uterus and ovaries, if it exists at all. The menopause sometimes occurs after the infliction of severe injuries upon the vagina during parturition, atresia

and cicatrization seriously crippling all the pelvic organs. Atresia of the vagina from other causes, or obliteration of the vagina by a neoplasm, may lead to retention of the menstrual secretion with great attendant disturbance; but if the ovaries remain intact, the menopause is unlikely to occur. In several cases of this character which have been under the author's care the unvarying rule has been that the menopause did not result.

*The Mammary Glands.*—The important influence which is exerted by the mammary glands upon the menstrual function, and consequently upon the menopause, must not be overlooked.

This subject has not received the attention at the hands of gynæcologists which it deserves. The mammary glands are a means for the diversion of a considerable portion of the vital energy of the uterus; their irritation causes uterine contraction. During the period of their highest functional activity the pelvic circulation is at its minimum, menstruation being diminished or discontinued.

The effect of continuous or nearly continuous lactation for a prolonged period, children being suckled almost without interruption for several years, can not fail in women who lack a superabundance of vitality to produce such a degree of contraction of the uterus that atrophy and the menopause will result.

The somewhat rare condition of superinvolution of the uterus may have such a cause. The author has seen it result in the menopause in the person of a vigorous young woman of twenty-six who had borne six children in rapid succession.

In the neoplasms of the mammary glands, however, the author has not observed that the influence upon the menstrual function was marked. Though this is one of the commonest seats of disease in women at all ages, such disease does not appear to have any particular bearing upon menstruation or the menopause. It is only when the glands in their genetic influence or relation, as some writers call it, are affected or concerned that

we see the diminution or cessation of menstruation.

That malignant disease of the breast occurs most frequently in the decade between forty and fifty, or the decade in which the menopause is of most frequent occurrence, is well known and has been the occasion of investigation by Birkett, Lebert, Scanzoni, Velpeau, Gross, and Winiwarter, but that it produces the menopause, except perhaps indirectly, as the nutrition becomes greatly impaired, the facts do not seem to indicate.

### 3. Anatomical Changes which are Coincidental with the Menopause, but which are not usually its cause nor caused by it.

*Accidental or Incidental Occurrences associated with the Menopause.*—The third subject for consideration in this connection concerns anatomical changes in the genital organs which are incidental to or collateral with the menopause, but which have no ætiological relation to it. The field which is covered by

this subject is a large and important one, for it will be apparent that there are many diseased conditions occurring during the progress of the menopause, sometimes of a severe or even fatal character, but not essential to it. The mistake has too often been made in the past of confusing these accidental occurrences with that which was customary and usual in the history of the menopause.

*Subinvolution.*—One of the very common morbid conditions which is incidental to the menopause is subinvolution of the uterus, a term which seems to the author more expressive and apt than areolar hyperplasia, or chronic parenchymatous metritis. It implies, of course, that one or more pregnancies have been experienced in a given case. With women who have borne many children, especially if childbearing has been begun rather late in life, such a condition may be easily explained.

*Hæmorrhages explained by Exuberant Nutrition.*—The superabundance of tissue in the uterus and the exuberant nutrition of the

endometrial mucous membrane explain the profuse hæmorrhages which often accompany this condition, prolong the menopause, and contribute greatly to the discomfort and inconvenience of the patient. In other cases the exhaustion produced by the hæmorrhages, or in part by them, causes premature appearance of the menopause, while in yet others, and perhaps the greater number of cases, the effect upon the menopause is insignificant.

*Relation of Malignant Diseases of the Pelvis to the Menopause.*—The entire series of malignant diseases of the pelvic organs, whether internal or external, has long been regarded as bearing a peculiar relation to the menopause. It is true that many cases of such disease take place between the fortieth and fiftieth years, when the menopause most frequently occurs. We have already alluded to this coincidence in previous pages and to other facts which had a bearing in the matter. We shall also find it necessary to allude to it again.

Galen and others of the early writers

originated the idea that there was a necessary connection between malignant disease of the breast and uterus and the menopause. From observations which were made by Boivin, Chiari, and others, the following table was constructed, representing the ages at which uterine cancer had developed.

| | Cases. |
|---|---|
| Under 20 years | 12 |
| From 20 to 30 years | 193 |
| " 30 " 40 " | 519 |
| " 40 " 50 " | 959 |
| " 50 " 60 " | 481 |
| " 60 " 70 " | 279 |
| Beyond 70 years | 210 |

The opinion of many writers also is that cancer of the breast occurs most frequently in the decade from forty to fifty. This has already been alluded to. (See also table on page 33.)

*Menopause is Conservative; Malignant Disease is Destructive.*—The theory of the menopause, however, is hostile to the plan and progress of malignant disease. The former is conservative, and consists essentially in utilizing to the utmost impaired and worn-out tissues and processes. With malignant

disease, on the contrary, a tissue is built up or infiltrated only to break down and be destroyed, the destructive process continuing and spreading until it annihilates.

*Total Number of Cases of Malignant Disease greatest before and after the Decade which includes the Menopause.*—It must also be remembered that the larger percentage of cases of malignant disease of the genital organs occur before and after the menopause. When such disease follows the menopause the mistake has not infrequently been made of attributing the coincident hæmorrhage to an incomplete menopause or to recurrent menstruation. Such mistakes are less excusable than they once were.

*Warning should be sounded before Malignant Disease becomes too Extensive.* — In any event it would be unreasonable for an intelligent physician, whether with or without special knowledge concerning the pelvic organs, to allow malignant disease of those organs, accompanied with repeated hæmorrhages, to reach the irremediable stage—that

is, the stage when radical surgical measures would be unavailing or impossible—before he called to his assistance the expert gynæcologist.

*Fibroid Tumors of the Uterus may simulate Malignant Disease.*—The anatomical changes which accompany fibroid tumors of the uterus during the menopause, especially the degeneration of the uterine mucous membrane with the sometimes attendant profuse hæmorrhage, simulate malignant disease, and require most careful attention in order that the differential diagnosis may be correctly determined. Benign growths of different varieties may develop in the genital organs coincidently with the menopause. Especially is this true of cystic tumors of the ovary, the active developmental period of which may continue even to the most advanced age.

*Changes in Neoplasms during and after Menopause.*—Atrophic changes in the solid and fibrocystic tumors of the genital organs are not as marked nor as frequent during the menopause as was formerly taught. We now

know that their development may continue uninterruptedly in spite of the menopause, that they may enlarge after the menopause has terminated, and that they may even undergo malignant degeneration after that period has passed.*

*Anatomical Changes due to Inflammation.*—The anatomical changes which may be produced by purely inflammatory processes of the genital organs during the menopause are the same as might occur if the menopause were not present. They are either of traumatic or infectious origin, and are not of frequent occurrence. The tissues at this period of life are far less susceptible to inflammatory influences than during the earlier part of life. The increased vascularity which such processes imply, certainly during their early stages, may possibly be accompanied with increased hæmorrhage at the returning menstrual epochs, and it would even be possible that the menopause might be retarded by

* See in this connection the writings of Müller, Gusserow, and others upon this subject.

such a process. The infrequency of such processes at such a time has resulted in the absence of investigations for the ascertainment of their particular significance.

*Destruction of the Generative Organs may hasten the Menopause.*—Complete destruction of the generative organs while the menopause is in progress, from whatever cause, will have decided influence in accelerating the termination of the menopause, especially if the uterus and the adnexa as well are destroyed or removed. If the mammary glands alone are removed or destroyed there is no evidence, so far as the author is aware, that the menopause will be influenced.*

* Gross and Winiwarter, in their analysis of six hundred and forty-two cases of mammary cancer, found four hundred and ninety-six in which it occurred subsequent to the age of forty. There is nothing in their writings, nor in those of Birkett, Lebert, Scanzoni, Velpeau, and Virchow upon this subject, to indicate that disease or destruction of these glands influences the menopause.

RESUMÉ OF THE FOREGOING OBSERVATIONS CONCERNING ANATOMICAL CHANGES, WITH CONCLUSIONS.

*The Changes of the Menopause are Atrophic; The Time Required Varies.*—The menopause is attended invariably by anatomical changes in the genital organs which are normally atrophic in character, but the period of time which elapses before such changes take place is a variable one.

*Atrophic Changes are the more Uniform in the Natural Menopause.*—When it occurs as a natural process the atrophic changes in the different organs are more uniform and more steadily progressive than when it is premature or complicated by diseased conditions of these organs.

*Diseased Organs may cause Irregularities.*—In cases in which there is disease of the genital organs or of any of the tissues which compose them the course of the menopause is irregular, and there is also irregularity as to the anatomical changes.

In some cases the menopause is retarded, the vascular supply to the genital organs being abundant, or if the disease is limited to one of the organs while the vascular supply is withdrawn from the others, atrophic changes may take place in the latter and not in the former.

In other cases, in consequence of disease, traumatism, or excessive function, the menopause may come prematurely, atrophy of the genital organs being also premature.

In yet other cases in which pathological anatomical changes in the genital organs have taken place, the menopause is indefinitely deferred, the organs do not atrophy, the discharge of blood continues, the tissue changes become destructive, and unless relieved by art the termination will eventually be a fatal one.

ADDENDA.

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## CHAPTER III.

### SOME OF THE FACTORS WHICH INFLUENCE THE ADVENT AND PROGRESS OF THE MENOPAUSE.

The scope of this chapter has included more or less which has been stated in the foregoing pages (anatomical changes, etc.), and it will also comprehend, to a certain extent, the material which will be found in the chapter immediately following this one, which will deal specifically with the phenomena peculiar to the menopause. The indulgence of the reader is besought if his patience is tried with apparent repetitions.

The following scheme represents the treatment of the subjects which are to be considered in this chapter.

FACTORS CONSIDERED.

1. Age. 2. Disease and traumatism. 3. Climate. 4. Heredity. 5. Temperament. 6. Accidental influences.

1. *Age.*

The testimony of various observers in different nations and countries.

2. *Disease and Traumatism.*

- A. Acute and chronic inflammatory processes.
  - *a.* Acute.
    - I. General.
    - II. Local.
      - *x.* Puerperal.
      - *y.* Nonpuerperal.
        - *c.* Infectious.
        - *d.* Traumatic.
  - *b.* Chronic wasting diseases of various organs.
- B. Degenerative processes.
- C. Neoplasms.
- D. Trauma.

3. *Climate.*

Including altitude and various atmospheric conditions.

4. *Heredity.*

Family, national, or race peculiarities. Fertility and sterility.

5. *Temperament.*

Habits, occupation, social surroundings. Sexual excess and abstinence.

6. *Accidental Influences.*

Fear, emotion, grief, etc.

*The Menopause means Tissue Changes.*—We have seen that the menopause signified tissue changes, changes in structure in the genital organs, and also that at the begin-

ning of the process those organs sometimes seem stimulated to unusual activity, the mammary glands swelling and perhaps secreting milk, or a fluid which resembles it, the uterus increasing in size and vascularity, and the entire genital apparatus undergoing a quite unusual degree of functional activity.

*Early Phenomena of the Menopause may indicate General Congestion.*—The discharges of blood from the uterus though less frequent are more copious, the sexual appetite may become intense, and this is the more noteworthy since it sometimes occurs in women who have previously been insensitive and unresponsive in this respect. The change in the individual, in her disposition, temperament, habits, as this process advances, is sometimes radical, marking quite as distinct an era in the life of the person as did the advent of puberty. The waves advance from puberty to the menopause; from this time onward they recede.

It was observed in a previous chapter

(see pages 27–38) in a general way that the individuals who constituted the different types of women experiencing the menopause varied in their peculiarities, and the experiences to which they were subjected were more or less significant. Let us now look at the matter rather more specifically and consider the factors which influence the advent and progress of the menopause.

*Factors of Influence vary for Different Women.*—These are not the same for all women nor do they influence all women with the same degree of effect. In the course of an experience of ten or more years of practice one will find the application of each factor in more or fewer cases. These factors may be classified as in the scheme at the beginning of this chapter, as follows:

1. Age.

2. Disease and traumatism, including the influence of undeveloped and badly nourished organs.

3. Climate, including altitude and all atmospheric conditions.

4. Heredity, including family, national, or race peculiarities.

5. Temperament, habits, occupations, and social surroundings.

6. Accidental influences, fear, misfortune, grief, etc.

### 1. Age.

The age at which the menopause occurs is modified, as stated on page 28, by many conditions, and the period of its duration is equally a variable quantity.

In the United States, at the latitude of New York and under the influence of a moist atmosphere, the menopause takes place in the large majority of instances between the fortieth and fiftieth years.

The menopause was observed in 150 cases taken at random from the histories of many thousand women who were seen at the class for gynæcology at the Outdoor Poor Department of Bellevue Hospital, in New York city, during a period lasting between

four and five years. The age limits in these cases were 30 and 53.

In 96 of these cases menstruation had ended, in 54 it still recurred, though infrequently. Of the first of these groups the terminations of menstruation were as follows:

| Age. | No. of cases. | Age. | No. of cases. |
|---|---|---|---|
| 30 | 2 | 42 | 2 |
| 31 | 0 | 43 | 9 |
| 32 | 1 | 44 | 10 |
| 33 | 2 | 45 | 6 |
| 34 | 2 | 46 | 5 |
| 35 | 0 | 47 | 5 |
| 36 | 1 | 48 | 10 |
| 37 | 6 | 49 | 4 |
| 38 | 5 | 50 | 2 |
| 39 | 8 | 51 | 1 |
| 40 | 4 | 52 | 2 |
| 41 | 6 | 53 | 3 |

The average age of this group was $39\frac{3}{4}$, but it is quite important to note that 63 were between the ages of 40 and 50.

Of the second group, viz., the 54 cases in which the interval of irregularity varied from a few weeks to ten months, the age limits were 38 and 52, the average being $44\frac{4}{54}$.

For the entire series of 150 the average age was 41⅓.*

As to the nationality of the women in this series, Irish and American predominated, but all the others had lived here long enough to be thoroughly influenced by such climatic and other surroundings as would have a bearing upon the appearance and progress of the menopause.

All these women, be it observed, belonged to the class of hard workers.

The duration from the beginning to the end of the menopause was not determinable in the greater number of these cases, unless we should consider the termination of menstruation as identical with the termination of the menopause. With the great majority of women, certainly with those who come to the notice of the physician, there is no such

* The much lower average age in this series than in the statistics which follow may be in part due to the smaller number of cases involved, and in part to the incident, not easily explainable, that so large a number as 39 of the cases which were investigated happened to be 40 years of age or less.

identity, and with many the common phenomena of the menopause, especially the heat flashes or vasomotor crises, are continued to the end of life, no matter how prolonged life may be.

More as a matter of curiosity or information than because any fundamental principles are to be deduced from them, the following statistical data, gathered from various sources, have been introduced:

*Germany.*—Kisch analyzes 500 cases from among German and Austrian women, in which the menopause had been passed, the termination of menstruation being probably alluded to.*

His figures are as follows:

| Age. | No. of cases. |
|---|---|
| 35–40 | 48 |
| 40–45 | 141 |
| 45–50 | 177 |
| 50–55 | 89 |

*France.*—Leudet† investigated the histories of 170 women at Rouen who had

* See article Climakterisches Alter in Real Encyclopädie.

† Comptes Rendus, Paris International Medical Congress, 1867.

passed the menopause, and found the average age for those who were in easy circumstances 47·4; for those who lived amid the surroundings of country life, 47·9; for those who were compelled to get their living by hard work, 48·7.

*England and France.*—Tilt analyzed the histories of 1,082 women in England and France, and found the average age for the menopause 45·7.*

*Norway.* — Faye found the average age in Norway, 391 cases being examined, to be 49.†

*Germany.*—In Berlin, Mayer investigated 1,546 cases with the result that the average was 47·03.‡

*Börner's Statistics.*—Börner # found that the average for the women of northern Europe was higher than for those in the southern countries, the following data from approved authorities being given by him:

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* Comptes Rendus, Paris International Medical Congress, 1867.

† Ibid. ‡ Ibid. # The Menopause.

Queirel and Rouvier give 46 years 11½ months as the average for Marseilles women. Goth gave the limits of 39 and 51 years for the women of seven tribes in Transylvania.

*Russia.*—Rodsewitch gave the average at St. Petersburg as 48 years 8¾ months, while Binsenger, at Moscow, found it only 40 to 43.

Furthermore, Lieven, at St. Petersburg, analyzed 100 cases in which the age limits were 40 and 53. In the same series 54 were between 47 and 50.

*Denmark.*—In Denmark 312 cases were analyzed by Hannover, the average being 44·82.

The following data were obtained by the author in the course of an investigation concerning the functions of the reproductive apparatus in our native American Indian women:*

| Names of tribes. | Age at cessation of menstruation. |
|---|---|
| Sac and Fox | 48 |
| Crow and Assiniboine | 49–50 |
| Uintah | 40–50 |
| Apache | 42–53 |
| Cheyenne and Arapahoe | 46–73 |
| Sioux | 38–58 |

* See Transactions, American Gynæcological Society, 1891.

*Early Menopause.* — As illustrations of very early age for the occurrence of the menopause the Arab women of the desert are cited, with whom it is frequently said to occur between the ages of 20 and 30.

Kisch tells of a Hungarian Jewess, fat from her youth, who menstruated at 9, married at 15½, was sterile, and ceased menstruating at 17. In another of his cases menstruation began at 13, marriage occurred at 16, sterility followed, and the menopause came at 20.

Mayer* saw two cases in Berlin in which menstruation ceased at 22. In one of these cases three children were born after the menses had ceased. In two others the phenomena of the menopause were present at 25. One of these women menstruated once in her twenty-fifth year after her second labor; she subsequently became epileptic and idiotic after having experienced severe fright. In another of Mayer's cases the menopause came

* Comptes Rendus, Paris International Medical Congress, 1867.

at 29 in a very fat woman who had borne six children at term and had had one miscarriage.

Brierre de Boismont and Courty (quoted by Börner, *op. cit.*) saw two cases of menopause at 21.

Schlichting observed that the menopause came at an early age in his experience with Jews and Roumanians, but no figures were quoted.*

*Late Menopause.*—Illustrations of prolonged menstrual life—that is, to the age of 60—are not very rare; but beyond 60 they are very unusual. Statements purporting to narrate such prolonged menstruation should be examined very cautiously before being accepted as facts.

The following cases are to be found in literature:

*Battey.*—One by Battey in which it is said that a woman of 93 menstruated.†

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* Zeitschrift für Geburtshülfe und Gynäkologie, 1880, p. 203.

† Börner, *l. c.*

*Pirou.*—One by Pirou in which a woman menstruated six months during her seventy-second year, then became pregnant, and aborted at the second month. The fœtus was recovered.*

*Sumpter.*—Four by Sumpter in women of 60, 70, 77, and 80, in which menstruation had been continuous at regular intervals.†

*Norton.*—One by Norton in which there had been regular menstruation without cessation in a woman of 74.‡

Two by Royle, one in the sixty-seventh and one in the ninety-third year.#

*Neumann.*—Neumann has collected reports from various authors who have reported cases to him between the sixtieth and one hundred and fourth years.‖

*Kisch.*—The oldest case reported by Kisch was 60.

The author has known families in which it seemed to be customary to continue to

* Lancet, 1866, i, p. 387.
† Lancet, ii, 1887, p. 284.
‡ Lancet, ii, 1862, p. 27.
# Lancet, ii, 1860, p. 527.
‖ Monatschrift für Geburtshülfe und Gynäkologie, Berlin, 1895, i, p. 238.

menstruate regularly until the fifty-fifth or fifty-sixth year.

*Conclusion as to Age Limit.*—It would therefore appear that the age limit is not one which can be defined with any approach to accuracy.

It is within the truth to say that the very large majority of women in temperate climates reach the menopause, or at any rate cease menstruating, between the fortieth and fiftieth years. It is probable that the greater number arrive at this condition between the forty-fifth and fiftieth years, while in the tropical climates the decade between 30 and 40 is the decade of the menopause, the majority of the women reaching it between 35 and 40.

2. Disease and Traumatism, including the Influence of Badly Nourished and Undeveloped Organs as Factors which bear upon the Menopause.

*Result of Sensitiveness of Menstrual Function.*—The menstrual function being one of

such extreme sensitiveness with many women it is not strange that perturbations of the general physical condition should lead in some instances to exaggeration of its phenomena, in others to diminished accentuation of the same, and in others to their complete suppression or disappearance.

Either of these experiences may be incidental to the menopause when induced by such physical perturbations, the menopause, as already remarked, applying not merely to the menstrual flow or the absence of it, but to the phenomena associated with it.*

### Classification.

The conditions which are alluded to in this connection may be classified as follows:

1. Acute and chronic inflammatory processes.

2. Degenerative processes (atrophy, obesity, defective development).

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* The reader will please bear in mind that we are now discussing the *accidental, not the regular,* conditions which have a bearing upon the menopause. The regular or usual concomitants will be considered in a subsequent chapter.

3. Neoplasms.

4. Trauma.

A. *Acute Inflammatory Processes.*—The acute inflammatory processes which have a tendency to precipitate the menopause are not numerous nor are they of very frequent occurrence. They are either (I) general or (II) local.

Among the former (I) may be mentioned measles, typhoid and typhus fevers, cholera, acute tuberculosis, the acute infectious diseases in general, and the toxæmia induced by various vegetable and mineral poisons—e. g., that of acute malaria and that which attacks workers in copper, lead, phosphorus, and arsenic. The *rationale* of their action consists in the diversion of the blood current from its pelvic channels and the development of a general acute anæmia in connection with or as a sequel of the inflammatory process. The menopause is especially liable to occur if the individual attacked is already in an enfeebled condition at the time of the attack or has such weak recuperative powers that the ef-

fects of the disease can not readily be thrown off. The defective nutrition of the pelvic organs in such cases results in impairment of their function and atrophy which may prove permanent, the menopause being established with or without other phenomena.

(II) The local acute inflammatory processes which lead to the menopause are rather more noteworthy than those of a general or systemic character, because attention is called to the condition and functions of the pelvic organs from the beginning. In a general way they may be divided into (*x*) those which are associated with the puerperal condition and (*y*) those which are not so associated.

(*x*) Of the former the processes which result in the menopause are extremely destructive, the ovaries being either disintegrated directly or destroyed by the pressure of the inflammatory material effused about them. Life itself is often sacrificed in such cases, or the patient may recover after a long

convalescence to find that the function of menstruation has departed.

The destruction of other tissues and organs, in addition to the ovaries, is incidental, and is always more or less extensive.

(*y*) The inflammatory processes unassociated with the puerperal condition and resulting in the menopause are of (*c*) infectious or (*d*) traumatic origin.

(*c*) Of the infectious processes gonorrhœa is one of the most common and noteworthy. It is true that it is usually a chronic process, and only develops its severer consequences with the lapse of months or years. There are frequently cases, however, in which its virulent effects upon the uterus and adnexa are almost immediate upon the reception of the poisonous elements. The menstrual function is immediately disturbed, the flow being in most cases greatly increased, and the result in a short time is the destruction of the ovaries and the abolition of menstruation.

Such a course of events is frequently to be observed when young and active men of

vicious habits, and with manifest or latent gonorrhœa at the time of marriage, marry young and vigorous girls with tissues which are in the highest possible condition of functional activity. The author has repeatedly seen such cases, the infection taking place almost immediately after marriage, and the woman becoming an invalid from that time onward unless relieved by surgical procedures. Infectious disease resulting in destruction of the ovaries and abolition of the menstrual function is also of occasional occurrence from the carelessness of physicians who may have introduced the specific germs by means of soiled fingers or instruments. Fortunately, with increasing intelligence and cleanliness on the part of those who practice gynæcology, such cases are becoming rare.

(*d*) Traumatism as the cause of abolition of the menstrual function, by local acute inflammatory process, may be accidental or intentional. In accidental cases, as, for instance, those in which the peritoneal cavity is penetrated, either through the vagina or the

abdomen by violent means, and the genital organs seriously injured, a condition of acute inflammation resulting, it may be questioned whether destructive consequences would follow without the abolition of the element of infection. As a matter of fact, it would be almost impossible to eliminate the element of infection from such cases.

This class of cases and also that other great class in which the trauma is inflicted deliberately by the surgeon, with the intention of producing the menopause, will come under consideration again and in a more specific manner.

### Chronic Inflammatory Processes leading to the Menopause.

*Greater Frequency of the Menopause from Chronic Inflammatory Processes.*—The menopause is induced by chronic inflammatory conditions and processes much more frequently than by acute.

They are simply the continuation of the acute processes, the element of time being

added, and the fact that the tissues in some individuals have greater powers of resistance than in others; also that an established function holds much more stubbornly with some women than with others. Like the acute processes, therefore, the chronic ones may be puerperal and nonpuerperal, infectious and traumatic; they may abolish menstruation by the anæmia which they induce, by the diversion of the blood current away from the pelvis, by direct destruction of the ovaries by pressure, or by the removal of the sources of nutrition of the organs by other means.

Of the systemic chronic conditions which are sufficiently well recognized as leading to the menopause, those which are associated with disease of the lungs, kidneys, and nervous system are to be mentioned, while as incidental processes, which will be a matter for subsequent consideration, may be mentioned certain lesions of the heart, liver, skin, digestive apparatus, eyes, etc.

## Wasting Diseases of the Lungs and Kidneys.

The chronic wasting diseases of the lungs and pleura, whether in the form of tuberculosis, abscess, congestion, or empyema, are very frequently attended with abolition or suspension of the menstrual function. This is a conservative act on the part of Nature, for individuals suffering with such diseases have no blood to spare. It is sometimes considered a bad omen by the uninformed, especially when it occurs in young women. It is a bad omen in the sense that women with such diseases frequently die as a consequence. If amelioration should occur and the patient should not have reached middle life, if, moreover, the genital organs have not been seriously damaged by disease in their own structure or in the tissues contiguous to them, the restoration of the menstrual function would be possible. The author has never seen it restored, when it has once been suspended, in one

who was suffering with fatal disease of the lungs.*

The exhausting effect of certain chronic diseases of the kidneys is sometimes manifested, as we have seen was the case with disease of the lungs, in the disappearance of the menses. This is true of the chronic forms of Bright's disease and of diabetes. The latter seems to have an especial predilection for disturbing the sexual appetite and apparatus in females as well as in males.

Lecorché † has observed cessation of the menses in seventy out of a hundred and fourteen diabetic women who came under his care. This observation was made not only in women who had reached the forty-fourth and forty-fifth years, but in those who had reached

* The evidence from autopsies in matters like these which are under consideration is always interesting and instructive. Simpson observed a case in which the menopause followed a first confinement in a tuberculous woman. She died soon afterward and her ovaries were found to be small, hard, and without Graafian follicles. See also Cases II, III, and IV (pp. 44–46) in Dalton's series.

† Annales de Gynécologie, October, 1885.

only the thirtieth to the thirty-fifth. Tait * has also observed that this disease frequently leads to the menopause at the time when arrest of the menses is about to take place. Strojnowski † observed that atrophy of the uterus and ovaries attended diabetes in women, one case in a women thirty years of age resulting in atrophy of the uterus, and eleven others resulting in atrophy of the ovaries. Premature occurrence of the menopause was also observed in such cases. It would seem, therefore, that the diseases of the kidney to which reference has been made might be causative of as well as incidental to the menopause.

### Diseases and Disorders of the Nervous System.

*Influence of Nervous Diseases on the Menopause.*—The diseases and disorders of the nervous system play so prominent a part in the

* Climacteric Diabetes in Women. Practitioner, June, 1886, p. 401.

† Diabetes with the Menopause. Satellite, January, 1892, vol. i, p. 93.

history of the menopause that the question very naturally suggests itself whether they may not sometimes be cause as well as so frequently consequence or concomitant.

Abundant observations concerning the latter of these two situations are at hand and will be referred to in a subsequent chapter, while no correspondingly precise information is available with regard to the former.

It is safe to say in general, however, that those diseases of the nervous system which are attended with marked anæmia will be followed by diminution of the menstrual flow, and in some instances by its permanent arrest.

*General Paralysis in Relation to the Menopause.*—Petit,* in an interesting paper relating to this subject, remarks that Germans and Italians believe that cessation of the menses is a frequent cause of general paralysis, the latter being thus constituted one of the diseases of the menopause.

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* The Relations of General Paralysis in Women to Certain Disorders of Menstruation. Gazette Médicale, February 23, 1889.

*Menstrual Troubles the Consequence of Paralysis.*—It is the opinion of Petit, however, that the menstrual troubles of paralytic women may be the direct or sympathetic consequence instead of the cause of cerebral disease.

In fifty-nine cases of paralysis in women which came under his observation there was disturbance of menstruation in fifty-two, and in every case the menstrual disturbance followed the paralysis. His conclusions are:

1. The development of general paralysis in women often leads to disorders of menstruation.

2. These disorders may be characterized by sudden and definite arrest of the menses, or by irregularity, though the menses may previously have been regular.

3. If there is remission of the general paralysis, the menses are usually restored.

4. If in a person who is attacked with diffuse meningo-encephalitis there is no existing menstrual disorder, such a person will resist menstrual disorder longer than one who

has had suppression or irregularity of the menstrual function.

B. Influence of Degenerative Processes, Atrophy, Obesity, Defective Development, upon the Advent and Progress of the Menopause.

*Atrophy producing the Menopause may be Primary or Secondary.*—Atrophic processes, as a cause of the menopause, may be primary or secondary. The latter may result from inflammatory conditions of an acute or chronic character, the nutrition of the essential genital organs being arrested or diverted or it may be directly shut off by persistent and destructive pressure upon the organs. The nutrition is sometimes sustained in a remarkable manner through the medium of the adhesions and new tissue in which the ovaries may be embedded, though the normal vessels of supply may be quite obliterated.

*Atrophy may be due to Excess of Function.*—When the atrophy takes place without the intervention of inflammation or neoplasm

it may be due to individual or racial peculiarity, to overstimulation or overactivity, as from excessive sexual indulgence or excessive childbearing, or to the anæmia which results from prolonged continuance of excessive menstruation in women of imperfect general condition.

*Superinvolution may induce the Menopause.*—That condition of the uterus which is known as superinvolution, and which sometimes follows a series of childbirths which rapidly succeed each other, lactation also being continuous, is usually an indication of exhaustion of the reproductive forces and a forerunner of the menopause. The atrophic condition of the uterus in such cases is manifest enough and the lessening or absent menstrual flow intimates the analogous condition of the ovaries.

*Obesity may induce the Menopause.*—Obesity has a decided influence both as to the advent and the progress of the menopause. The circulation in a very fat person is usually impaired.

The nutrition of the muscles and viscera must suffer when the tendency to undue accumulation of fat is present. In the viscera such a tendency takes the form of fatty degeneration, which is in every way an unfavorable condition.

With obese individuals it is readily determined that the pelvic organs suffer in common with the others, their functions likewise being involved, the menstrual function included.

Very fat women menstruate scantily (oligomenorrhœa) and suffer pain with each returning period. They are usually sterile or bear at most one or two children. This fact was observed long since, and was recorded by the ancient writers Hippocrates, Avicenna, Laurans, and Hoeflerus.

*Formula concerning Obesity.*—The law which governs this matter may be formulated as follows:*

1. A woman under thirty years of age,

* See also author's paper on Obesity, Transactions, New York State Medical Society, 1888, p. 98.

who bears four, five, six, or more children in rapid succession and suckles them, prematurely reaches the limit of her reproductive capacity, the phenomena of the climacteric supervening. This applies to the average woman under existing conditions of civilization, and in a marked degree to those who become obese after such frequent pregnancies.

2. A woman under thirty years of age who becomes obese, from whatever cause, will usually suffer with amenorrhœa or oligomenorrhœa, the menstrual flow, if present at all, being accompanied with pain, though prior to the accumulation of fat it may have been painless. If such women marry, they are usually sterile.

*The Menopause from Defective Development.*—The menopause which results from defective development is easily comprehended and accounted for. Individuals with inherited deficiency of vital force, with syphilitic or tuberculous taint, whose lives are one long struggle with disease, do not, as a rule,

possess great reproductive force. If the menses are established at all, they are imperfectly performed, almost always with attendant pain, and terminate after a few abortive attempts.

The defective development may be limited to the pelvic organs, the remainder of the body being sufficiently vigorous. A defective uterus does not necessarily imply inability to menstruate, for menstruation and even pregnancy continuing to term may take place in a unicornate uterus or one which is otherwise defective. As a rule, however, menstruation will be imperfect and the menopause will arrive early in those women with whom the uterus is small, hard, badly nourished, and composed largely of connective tissue, the ovaries small and poorly nourished, and the Fallopian tubes mere strings of connective tissue, with a few muscular fibers. Defective development of the genital organs in other particulars may be present, and the function of menstruation be unimpaired, at least for a time. The vagina may be defective or even

absent, the hymen may be preternaturally firm, the os uteri may be nearly or quite occluded, and yet menstruation go on regularly, a part of the menstrual flux being reabsorbed and the residue remaining to distend the organ which contains it. The consequences may be serious if the retained material is not liberated and the passages made pervious for the future; but if that is done, the function of menstruation may continue uninterrupted by this incident.

### C. Neoplasms, their Influence upon the Menopause.

*The Influence of Neoplasms on the Menopause is very Great.*—The influence of neoplasms as a factor which has a bearing in hastening or retarding the menopause is very great, in fact, there is no factor which bears upon the subject which is of greater importance. The conditions of the question vary according as the neoplasm is intrinsic, developed within the structure of the pelvic organs, or extrinsic, developed without and

bearing only an accidental relation to them.

*Neoplasms which are External to the Organs essential to Menstruation.*—When the neoplasm is external to the organs which are essential to menstruation the field for consideration becomes a rather restricted one. Those cases are excluded in which the process is simple and entirely an inflammatory one, though the resulting exudate may cement the extra pelvic organs into a mass which presents the gross appearance of a neoplasm and exerts unfavorable influence upon the menstrual function. Such cases have already been considered.

*Malignant Growths predominate.*—The neoplasms which are now to be discussed may be benign or malignant, but the latter predominate. They include the morbid growths which are sometimes associated with tuberculosis of the abdominal viscera, ascitic accumulations which are associated with various diseases of those viscera, the rare cystic neoplasms of the pancreas, kidneys, mesen-

tery, etc., usually of a benign character, and the entire series of malignant growths of the liver, mesentery, omentum, kidneys—in fact, all the abdominal viscera. These diseased conditions attack women at all periods of life, certain forms being encountered more frequently at one period than another, and influence the menstrual function, both through their immediate contact with the genital organs and their influence upon the general nutrition.

*Pressure may cause Atrophy of the Organs of Generation.*—The pressure influence may be sufficient to occasion atrophy of the essential organs of menstruation, as has been observed with respect to other conditions, in which case the menstrual function might be suspended or an intimate bond of union might be established between neoplasm and pelvic organs, with the result of greatly increasing the vascular supply of those organs and greatly increasing the menstrual flow.

*Malignant Growths may increase the Menstrual Flow.*—Increase of the menstrual

flow is the usual course of events with the malignant neoplasms. They are of rapid growth, often cause great distress by their pressure influence, and quickly induce, by means of the exhausting discharges which accompany them, an anæmia which is only a forerunner of the fatal issue soon to occur. When the neoplasm is developed from the pelvic organs themselves, its influence upon the menstrual function is often a matter of vital importance. The current opinions upon certain aspects of the subject are undergoing change which will be referred to at a later stage of the discussion.

Here also neoplasms are to be considered, with reference to their effect upon the menopause, as benign or malignant, the distinguishing feature of the latter being that they always provoke an increase in the discharge from the uterus, while with the former the menopause is in some cases hastened, in others retarded, while in others no effect is apparent.

*The Evil Effects of Malignant Neoplasms are manifold.*—The evil effects of the ma-

lignant neoplasms, whether of the uterus, ovaries, or tubes, and whether solid or cystic, are manifold. The constitutional effects, anæmia and debility, do not in this case tend to lessen the flow of blood from the uterus, neither does the pressure of even large tumors produce the atrophy of the genital organs and subsequent cessation of uterine hæmorrhage which sometimes occurs with benign tumors. On the contrary, the malignant disease almost always signifies greatly increased vascularity, and not only increased loss of blood at the menstrual epoch, but at irregular periods as well. Great loss of blood from the uterus is so common a symptom of malignant disease of that organ or its adnexa that the possibility of such disease must always be considered when such hæmorrhage occurs.

*Hæmorrhages during the Menopause call for Careful Attention.*—Especially should one be very watchful if the profuse hæmorrhage occurs during the period of the menopause, while if it occurs years after the disappearance of the menses it furnishes one of the

strongest possible evidences that malignant disease is present.

*Neoplasms, apart from the Genital Apparatus, not under discussion.*—Neoplasms of the pelvic organs, apart from the organs of the genital apparatus, are not especially under discussion. They would include tumors of the bladder, rectum, peritoneum, and bony structure of the pelvis, and the same remarks would apply to them that were made concerning neoplasms of the abdominal cavity.

*Pressure Influence of Solid Tumors usually greater than that of Cystic.*—The benign neoplasms of the pelvic genital organs, in their influence upon menstruation and the menopause, may be considered as solid and cystic, as acting by simple contact and pressure, and as having additional action by means of the organic union which results when a neoplasm becomes attached to an organ by adhesive inflammation. The pressure influence of solid neoplasms upon the structure which is essential to menstruation—that is, the influence which causes atrophy when

the structures fill the pelvis—is usually greater than that of the cystic. We would therefore expect that the abolition of menstruation by destructive pressure upon the ovaries would take place more quickly with a solid than with a cystic tumor.

*Ovarian Tumors may be very Large and Menstruation remain undisturbed.*—A tumor of the ovary may reach a great size, or both ovaries may be involved in extensive cyst formation, menstruation continuing uninterruptedly meanwhile and without especial disturbance. But when the tumors are removed menstruation either stops at once or within a very short time, which shows either that menstruation was continued by virtue of a portion of ovarian tissue which remained intact, or by the vital connection with the remaining pelvic organs which continues unimpaired. Whether this means the presence of an essential nerve structure or a glandular structure which has been found by anatomists who were unable to find the nerve described by Johnstone, is at this moment undecided.

The benign tumors, involving more or less of the structure of the uterus, are either solid or fibro-cystic, the latter being infrequent compared with the former.

*Influence of Uterine Tumors upon Menstruation.*—When the relation of the tumor to the uterus is not very intimate—that is, when the bond of union is a stalk or pedicle—the influence of the tumor upon menstruation and the menopause may be slight or nil. When the tumor is within the wall of the uterus or has protruded into its cavity, its influence upon menstruation is considerable; the blood stream which nurtures the tumor must nurture the uterus as well, and the action and reaction of uterus and tumor upon each other, in this particular, become the more marked as the site of the tumor approaches the area of greatest vascularity of the uterus—that is, the area contiguous to the entry of the uterine artery into and the exit of the uterine vein from the uterus. In such cases menstruation is almost certain to be profuse, and in many cases there are effusions

of blood, aside from the menstrual flow, at frequent intervals; in not a few cases the leakage of blood is almost continuous.

*The Opinion that the Menopause will see the end of Uterine Hæmorrhages is frequently erroneous.*—It was formerly supposed that all these cases would get well if they could only pass the trying ordeal of the menopause, and they were encouraged to hold out until that event should occur.

But the hopes which were aroused were often delusive—

"The baseless fabric of a dream."

The menopause constantly eluded these sufferers like an aggravating Will-o'-the-wisp, and many of them died from sheer exhaustion and loss of blood, without the least amelioration in the conditions relating to the uterine tumor. All this was the result of an imperfect pathology and of imperfect observation. It is true that some uterine tumors ameliorate with the menopause. Some were never the source of any particular trouble, especially those with which the pedicle is a long one.

Others may have given much discomfort, and if they occur in women who have never been pregnant and who never have sexual intercourse—in other words, if the only congestion to which they are subject is the congestion of menstruation—they sometimes improve with the menopause.

*In many Cases of Fibroid of the Uterus the Menopause does not come unless it is induced.*—In many other cases, perhaps the majority, the menopause brings no relief, or rather the menopause does not take place, and the sufferers continue to lose blood and vitality indefinitely unless radical measures are adopted for their relief. Fortunately, such measures of relief are now entirely available in any portion of the world where the science and art of gynæcology are successfully cultivated, and the old argument that the menopause will bring a cure becomes true, but under conditions which are entirely different from those which once prevailed.

### D. Trauma as a Factor in the Development of the Menopause.

*Destruction of the Genital Organs by Accidental Traumatism very Rare.*—If we consider the element trauma or traumatism merely as an accidental condition resulting in the menopause, it would not require very extended notice. One of the rarest occurrences in the world is an accident which destroys the genital organs and, as a consequence, abolishes the menstrual function. It is possible for a woman to fall astride a picket fence, or to have the leg of a chair or a poker or some other brutal instrument thrust into her vagina, or to be ripped open by the horn of an angry animal, and, if she survives the accident, to do so with her sexual organs destroyed or so mutilated that menstruation would not recur. An accident of such a character would excite interest quite as much on account of its peculiarity as from the seriousness of its nature and import.

*The Artificial or Surgically Induced Menopause.*—There is, however, a form of traumatism which results almost uniformly in the menopause which occurs with great frequency at the present time, and is inflicted deliberately by the surgeon with the knowledge and intention that the menopause shall result. Such a result thus produced is known as the artificial menopause, and has introduced a new era into surgical practice, scattering blessings broadcast, producing good results in some cases and bad results in others.

It will be considered at greater length in another chapter.

### 3. Climate, including Altitude and all Atmospheric Conditions.

*Atmospheric Influence varies with Different Conditions.*—The influence of atmospheric conditions upon the menstrual function is of course much more marked in some individuals and families than in others.

The statements which are to be made

upon this subject must be received with a certain amount of latitude, though it is believed that the observations have in most cases been sufficiently extensive and the conclusions sufficiently accurate to warrant their acceptance.

The question of the establishment and the continuance of menstruation naturally calls for a certain degree of consideration in this connection.

*An Out-of-door Life may favor the prolongation of the Menstrual Era.*—Bearing upon this subject is the observation which has been frequently made that country women retain the menstrual function longer than city women, and workingwomen—that is, those who work out of doors and in the fields—providing that their labor is not of too severe a character, retain it still longer. Thus Leudet * found the average age at the menopause of the first of these three classes in question 47·4 years, of the second 47·9, of the third 48·7.

* Comptes Rendus, Paris, 1867.

*Observations as to the Age of the Menopause by Various Writers.*—The same relative differences obtained in Leudet's experience in the establishment of the menstrual function.

Somewhat similar facts were observed by Kisch, whose book on the menopause has been frequently alluded to. Kisch and Börner observed also that in the northern countries of Europe the menopause came later than in the southern.

On the other hand, it does not always follow that early puberty, which is sufficiently frequent to become almost the rule in warm countries, means necessarily an early menopause. Upon this latter point Tilt has observed * that while the average age of puberty among the Hindus is twelve years, the menopause is frequently delayed until the age of fifty. The same author states that the aver age for the menopause in Norway was 49, puberty averaging 16·375, while in England and France the average was 45·7.

* Comptes Rendus, Paris, 1867, p. 187.

In the latitude and climate of St. Petersburg 100 cases were analyzed by Lieven, the limits of puberty being 11 and 22, while those of the menopause were 40 and 53; but in 54 of these cases the limits were 47 and 50.

In Denmark Hannover found the average age for the menopause 44·82, which seems a low estimate for that latitude and climate. Another writer placed the average of puberty for nearly 4,000 cases at 16 years 10 months 5 days. For the north and center of Germany Mayer* found the average of puberty for the upper classes 15·19, for the lower classes 16·50, for country girls 15·20, for city girls 15·98. He satisfied himself that the age of puberty varied directly with the altitude. The average for the menopause at Berlin in 1,546 cases which he analyzed was 47·03.†

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* Comptes Rendus, Paris, 1867.

† The foregoing data have been already quoted, see pages 99 and 100, but in the former instance they were adduced to show the influence of age with reference to the menopause; now they are invoked in respect to climate.

Cortajarena is on record as believing that climate, race, and differing conditions of life have no direct and immediate effect on menstruation, but that their effect is subordinate to nutrition.

*Different Effects of Tropical and Temperate Climates.*—It would seem to be both reasonable and logical that the same forces which in the tropics result in rank vegetation and early maturity should have a like effect in the physical development of human beings, unless means were taken to prevent or neutralize such results. The forces in question are mainly high temperature, abundance of food, and *vis inertiæ*, and they may and indeed do prove deleterious when considered from certain points of view; thus India can not be colonized by the English as they have colonized Australia and America, for the simple reason that the intense and prolonged heat of the climate is too exhausting to their vitality, and their reproductive force is said to be spent with the second generation.

In the temperate climates growth and ma-

turity are slowly acquired, vitality is longer retained than in the tropics, and we should consequently be led to expect a somewhat later occurrence of the menopause. In very cold climates the forces which dwarf vegetation and limit its fecundity have an analogous effect upon the vital functions of man. For example, the Eskimos are small in stature, the women do not menstruate until the twentieth year or later, and the number of children in a family seldom exceeds three; oftener it is less than that number. Both the menstrual function and vital force itself are exhausted at an early age.

*Varying Effect of Atmospheric Pressure.*—The effect of atmospheric pressure upon menstruation and indirectly upon the menopause deserves a word in passing. Of course, when the atmospheric pressure is great, as at the sea level and by the seashore or on the sea, the internal pressure that is within the cavities and canals of the body is exposed to its greatest resistance; while as one advances into the interior and ascends to higher and

higher elevations the pressure relations are reversed, the external diminishing with the rarefication of the atmosphere and the tension within the vessels and the cavities increasing.

*Suspension of Menstrual Function with Change of Residence.*—A woman who passes from the interior of a country to the seashore or who takes a sea voyage will in most cases observe that her menstrual function is for the time suspended, or the flow is diminished, or she suffers pain to which she may have been a stranger at previous menstrual epochs. In certain cases it is possible that the menopause may result from a sea voyage or the transfer of one's residence to the seashore, adjustment to surrounding conditions in reference to the menstrual function not being effected. This fact is too often overlooked in the treatment of women who are approaching the menopause, and it should be carefully considered in the hygienic regulations which are formulated for such individuals.

*In prescribing Change of Residence the Effect of Atmospheric Pressure may be a Matter for Serious Consideration.*—The action of physical laws upon the surface and the interior of the body should also be taken into consideration when a woman removes her residence to a locality in which the atmospheric pressure is low. Hæmorrhage is favored by such physical conditions, and the menopause may be indefinitely prolonged or deferred by them. Especially is this the case with those who are suffering with uterine disease in which hæmorrhage is a noteworthy feature. The same physical conditions which favor nosebleed, hæmoptysis, purpura, etc., in those who are susceptible to such accidents will favor hæmorrhage from the uterus, and, to a greater or less degree, delay the menopause with individuals who suffer with uterine disease in which hæmorrhage is a characteristic symptom. The fact that adjustment to climatic surroundings is possible is of course admitted, but the risk in acquiring such adjustment and acclimation is some-

times as great with uterine disease as with pulmonary disease.

*The Risk in acquiring Acclimation at great Altitudes is sometimes Considerable.*— The subject of climatology in its relation to the diseases peculiar to women is one which has been almost universally ignored by those who teach as well as by those who practice gynæcology. It offers a promising field for future investigation in a limited range of conditions.

4. Heredity, including Family, National, or Race Peculiarities.

*Reproduction of Family Peculiarities.*— One of the most plausible propositions in Darwin's theory of evolution is that the habits and tendencies of parents are prone to produce certain peculiarities which are repeated, sometimes with more or less modification or accentuation in their offspring, leading in process of time to a change of type.

While this may not hold as a universal law and thus enables many a keen observer

to deny that it holds as a law at all, any physician who has practiced within a limited area of territory and has observed the characteristics of the families in his *clientèle* for a long period of years can recall plenty of instances in which parental peculiarities have been reproduced from one generation to another.

The menstrual function is no exception to the somatic conditions which are influenced by heredity.

*Lateness of the Menopause as a Family Characteristic.*—Lateness in the appearance of the menopause is a characteristic in some families. The author is acquainted with such family histories in which the fifty-fifth or fifty-sixth year is looked upon as the time when the menopause may be expected, this having been the rule for two or more generations. In some families the menopause comes abruptly, menstruation suddenly ceasing forever; in others irregular periods of menstruation drag along through one or more years. The bleedings are insignificant in some families; in others they are always profuse

though the result may not be malignant disease.

*Family Taint.* — Family taint probably has something to do with the fact that both the men and the women in certain families develop malignant disease as age advances. There seems to be no more inherent improbability as to such a tendency, which doubtless is outlived or overcome in some cases, than there is as to the manifest tendency in other families to the development of tuberculosis, scrofula, etc. Certain family or race traits in respect to the menopause become intensified as time progresses, while others become modified and gradually lost. Especially is there a modification of these traits when the family or the race migrates to a locality in which the climatic conditions are radically different from those to which they have been accustomed.

*Peculiarities of Jewesses and Indians.*— Jewish women, as a race, suffer less during the menopause than other races, whether on account of their ceremonial laws and customs

or for some other reason, the writer is unable to state.

The American Indian women are very rarely conscious of anything unusual during the menopause, and they may be taken as the type, in regard to this matter, of savages and barbarians in general whose surroundings are of the average degree of comfort and enlightenment. The phenomena connected with the nervous system are very prominent and decided during the menopause, and the influence of family traits and tendencies is most pronounced in this direction. Melancholia, cerebral congestion, hysteria, etc., are the anticipated accompaniments of the menopause in certain households. Perhaps if they were not expected, in a sort of historical succession, they would not appear.

*The Menopause is Insignificant with the Majority of Women.*—After all, we must remember that the greater number of women who reach old age never consult a physician concerning the experiences of the menopause. They are as ignorant of the significance of the

cessation of the menses as they are of its establishment. It is fair to assume that with such women the menopause is not an experience of serious moment or one in which extensive information would be of any particular value.

"When ignorance is bliss, 'tis folly to be wise."

### The Bearing of Fertility and Sterility upon the Menopause.

This is a subject of no little importance, and the one or the other of these conditions is often the characteristic of certain families or tribes.

*Fertility and Sterility are Relative Terms.*—It must be remembered that these terms have a relative as well as an absolute meaning, fertility in individuals of one class or type not being applicable to those of another. There is also a sterility which is relative and one which is absolute.

In the case of a rather feeble, poorly developed, physically inferior woman, the bearing of three or four children at brief intervals

may be a great tax on her vitality, indeed it may be a strain greater than her vital resources will bear. Another woman with robust physique and great vitality may bear a dozen children in as many years without serious detriment. If we take the average of women, however, it is very much the same as it is with the fruit trees—a period of bearing should be succeeded by a period of rest. If the boughs are heavily laden with fruit year after year the vitality of the tree will soon be exhausted. Such a result is prevented by the off years in which little or no fruit is borne.

*Excessive Fertility may hasten the Menopause.*—With many women the bearing of six or seven children in rapid succession, lactation being almost uninterrupted, means the exhaustion of the reproductive force, and women who are thus excessively fertile prior to the thirtieth year usually reach the menopause very early.

Excessive fertility in women of weak or depraved constitution, if it does not exhaust

their vitality completely, is apt to lead to a premature menopause, even though there may be an interval of two or three years between pregnancies.

Examples of this are women with phthisical tendency, and women with slender physique and frail constitution, though without deep-seated disease. Such women abound in our modern society, especially in the cities, the visible evidence of false ideas in the training and development of children. Ill prepared are they to bear the strain of repeated pregnancies, especially when they have in addition the cares of a household, the dissipations or the exactions of society life, and it may be an unreasonable, selfish husband. The children in such cases are too often puny and short-lived, and a premature menopause to the mother may be regarded in the light of a blessing and a relief.

*Prevention of Pregnancy Warranted in some Cases.*—It would seem to follow from the foregoing that with some women pregnancy under any circumstances would be

injudicious and undesirable. This is unhesitatingly admitted, not that the interruption of pregnancy by forcible means is advocated—far from it. A pregnancy having begun must not be interfered with, except when it becomes an actual menace to the life of the mother. But when the conditions involved are a delicate, diseased, badly developed woman, with not enough vitality for her own use, and a feeble, puny, imperfect child, with little hope or prospect of being anything but a burden to others as long as it may live, it would seem logical and reasonable that so much mischief and misery should be forestalled either by the avoidance of marriage on the part of the woman or the avoidance of conception if marriage is insisted upon. Fertility in such individuals is excessive, under any circumstances, and is to be deprecated.

*Childbearing no Burden to many Well-developed Women.*—With the woman of grand physique, to whom childbearing is no burden, but merely the accomplishment of a

physiological act, the response to one of the highest impulses of their nature, the menopause is not hastened nor in any way unfavorably influenced by pregnancies as frequent as Nature will permit.*

Such women are often the mothers of heroes. They glide into pregnancy and labor and out again with little discomfort, taking up the thread of ordinary life again with little disposition to get it tangled, menstruating perhaps until the fiftieth year or its vicinity, and experiencing little trouble with its passing away.

*Bearing Children a Normal Function of Women.*—With regard to the influence of sterility upon the menopause, a writer has recently said that from a physiological standpoint the great object for which woman was created was to reproduce her kind. This seems the more reasonable when we realize

* The author reserves as exceptional those cases already alluded to, in which repeated pregnancies and lactation in almost uninterrupted succession, especially in young women, exhaust the reproductive force and hasten the menopause.

that a decidua or nest for a fœtus is provided each month, only to be shed and cast off in case it is not utilized by a fertilized ovum. From a physiological standpoint, therefore, a sterile woman is a failure.

*Virgins and Married Nulliparæ.*—There are two classes of such women, virgins and married nulliparæ. According to the existing status of civilized society the former are debarred from becoming pregnant, and properly so, unfortunate though it may often seem to be from the before-mentioned physiological standpoint. The latter are in some cases intentionally and willfully sterile, and in others the sterility is due to deformity or defect on the part of the woman or her husband, or both.

It would seem as if such a contravention of physical laws * must be followed by bad results which would manifest themselves, particularly in connection with the menstrual

* Of course, reference is made exclusively to those who are physically competent to conceive and carry offspring to term.

function. Such a result does occur, and would probably occur more frequently if women led merely an animal life; fortunately, however, the cares and occupations which come to most of them, whether single or married, divert them from undue attention to such subjects, and in a measure compensate for the incomplete accomplishment of natural functions.

*Course of Menstruation and the Menopause in the Sterile.*—With the sterile a process goes on which is analogous to the atrophy of structure when that structure goes long unused; the recurring congestions of the menstrual epoch fail to excite those impulses to reproduction which are excited in those with whom such impulses take their natural course, and the menopause is approached and experienced without any unusual phenomena resulting from the sterilty. With those who have preserved their vitality the menses may suddenly stop, and the individuals will be conscious of no particular change except that they no longer have

monthly molimina and bleeding and that they are increasing in weight.

In occasional instances the development of a serious disease settles upon them like a pall, all trace of the monthly sickness disappearing in the general breaking up of Nature. In others, again, there are the same pains and aches, with infrequent recurrences of the flow, perhaps an occasional metrorrhagia, vasomotor disturbances, so noteworthy at this period, and final subsidence in the quiet of mature life.

### 5. Temperament, Habits, Occupation, and Social Surroundings.

*Inherent Tendencies in Individuals.* — There is much to be said concerning the destiny or fate of human beings on the side of the influences which are fastened to them when they come into the world. Some individuals may appear to shape and fashion a portion, at least, of their experiences as a helmsman guides a ship. But this may be only the outward appearance, and it is cer-

tain that even these individuals, heroes, beings of exceptional strength, are at times driven irresistibly by forces over which they have no control, though they sometimes gain control, after years of struggling have elapsed, by that process of adaptation which so often adjusts means to ends.

*There are also Inherent Tendencies with Reference to Menstruation and the Menopause.*—It is the same with the functions of the body, and menstruation with the menopause is not an exception. There are the unconscious influences—those with which women are born, the family and race peculiarities—the intrinsic, and there are the extrinsic, the outward, also great modifiers of experience which may be useful or harmful, according to circumstances.

*Disposition as to the Individual has much to do with the Course of the Menopause.*—A woman who is endowed with a quiet placid temperament, who takes the experiences of life philosophically and without fret, is more than likely to pass through

the menopause peacefully, provided, of course, that there is no intercurrent development of disease.

It is the nervous and hysterical woman, the one whose thoughts and sympathies are centered upon herself, who has a hard time at the menopause, or at any rate she thinks she has.

These are the influences of inheritance (though sometimes, of course, they are due to faulty education, to want of restriction and training during childhood and young womanhood), the conditions to which we are chained when being begins, and they can not easily be shaken off.

*Unfavorable Experience during the Menstrual Life often implies a Similar Experience during the Menopause.*—As to outward influences, those who have had a stormy experience in general, and especially those who have always suffered with their menstrual periods, whether from pain, excessive flowing, or irregularity, are prone to be sufferers during the menopause. We should

hardly expect anything else when we realize the vascular and nervous conditions which attend it.

*Irregular and Unwomanly Occupation may bring an Early and an Uncomfortable menopause.*—Those whose lives have been marked by excesses of various kinds, by intemperate use of alcohol, by sexual vice, by exhausting labor, by bad hygienic surroundings, are very apt to cease menstruating early, and with more or less associated pain and other trouble.

Women with occupations in which there is exposure to great atmospheric changes, who have an insufficiency of pure air, food, and clothing, often reach the menopause early in life and with no little discomfort. Such are workers in various metals, copper, phosphorus, lead, etc., fishwives, women who work in mines, and as day laborers in the streets and fields. Surely this is not woman's work or we would not see such pitiful spectacles of decrepit and wrinkled and worn-out creatures at a period when the

blush should still be on the cheeks. The great hospitals in the European cities are crowded with such as these.

*Effects of Occupation upon Cooks, Laundresses, and Others.*—There are also other occupations for which women seem to have more or less of fitness, but which, nevertheless, produce rather striking results upon the physical condition, and results which are not always favorable. Types of this class are furnished by cooks and laundresses—women who work many hours a day in a very elevated temperature, and, in the case of cooks at least, are constantly inhaling the volatile portions of cooking food. Such women in many instances not only become very fat, but suffer greatly with menstrual disorders (dysmenorrhœa, oligomenorrhœa, polymenorrhœa); they are usually sterile, and reach the menopause at a comparatively early period.

*One's Trade or Occupation may be the most Potent Factor in Determining the Menopause.*—It will thus be seen that the influence of one's trade or occupation, the purely

external and extrinsic media, may be a most potent factor, perhaps the most potent factor, in determining the time and the mode of the menopause.

### Sexual Excess and Abstinence.

*Very Important Subject.*—This is a subject in which the relation to the menopause would seem to be so intimate, and in which there is so much material for thought and consideration, that though it is but a subdivision of the section which is now under consideration, it is of sufficient importance for particular attention. The sexual apparatus is an essential portion of the structure of the body—that is, the body is incomplete if the sexual apparatus is wanting.

*Imperious Character of the Sexual Appetite.*—The sexual appetite is as appropriate to an individual as the appetite for food. In many cases it is quite as imperious as the appetite for food, and in individuals with whom the animal part of their nature predominates it is practically uncontrollable.

This fact explains many of the horrible crimes which have been perpetrated upon helpless women and defenseless children. Excessive indulgence of this appetite is followed by results which are sometimes disastrous. Complete abstinence is probably followed by bad results in some cases, but the proportion of cases in which injury follows denial of the natural inclinations is very much smaller than that in which those inclinations are uncontrolled and unregulated. The submission of the material side of an individual to the spiritual is seldom followed by any but desirable consequences.

*Sexual Excess and the Functions of the Genital Apparatus are Relative to the Individual Concerned.*—To fix a standard as to sexual indulgence or to define sexual excess is extremely difficult and will not be attempted. It must always be relative to certain conditions inherent in the individual concerned.

The same is true concerning the functions, in general, of the uterus, and therefore

in one case menstruation must be encouraged, in another repressed. Childbearing will be a blessing in one case, in another a bane. Coitus may be practically unrestrained, so far as tolerance is concerned, with one woman, while with another it must be abstained from.

If we were to consider that the normal type of operation as to the sexual functions exists among savages who are living in the so-called "state of Nature," and look among them for the best, that is, the most natural results, we should be disappointed. Those who live in accordance with natural appetites—that is, but a short remove from the animals—do not present the best results from a physical standpoint.

*The Best Types of the Sexual Life are not to be found among Savages.*—The women, among savages, must do the work; they must yield to the caprice of their husbands' appetites, whatever be their own physical condition; they must bear and look after the children, and, as a consequence, they are worn

out relatively early; their sexual organs and proclivities suffer from abuse and excess, and they become old and wrinkled when those who are less hardy and robust, but who have been more rational in their sexual life, are still menstruating and capable of procreating healthy offspring.

We should learn from the experience with the domestic animals that when women are well and intelligently treated and cared for the physical results will be better in all respects.

Attempts have been made from time to time to reduce the question of sexual indulgence and childbearing to scientific limits.

*The Experience of Stock Breeders suggests the application of Similar Principles among Human Beings.*—In view of the excellent results which are attained by stock raisers by judicious mating and crossing, it would seem as if great results might be possible in the begetting of children by the application of analogous methods. The obstacles in the way of such an end have thus far,

however, proved insuperable, individuals in general appearing to act as if the laws which govern and control reproduction in man were different from those which affect other animals.

*Concerning the Oneida Community.*—Interesting in this connection are the experiments which have been made by different communities of socialists, and especially interesting is the study of the Oneida Community of socialists which was made a few years ago by Dr. Ely Van de Warker.*

The conditions in this case were extremely favorable for scientific investigation, for the individuals concerned were, for the most part, occupied with healthful duties; they had good hygienic surroundings, plenty of food and clothing, relief from the ordinary worry of life, and freedom from the dissipation which ordinarily goes hand in hand with lives of sexual indulgence.

The total number of the cases which were studied is small, but if we take these cases as

* See American Journal of Obstetrics, 1884, p. 785.

fair examples of that which might usually occur under similar conditions, we can see that abundant sexual indulgence is not necessarily followed by unusual experiences at the menopause. The theory of the Oneida communists was that sexual intercourse being the response to a natural appetite might be indulged in until the appetite was satisfied, but that inasmuch as good specimens could be reproduced only by certain types of individuals, conception was to be prevented excepting in selected cases.

Van de Warker's table contains histories of forty-two women, many of whom were born in the Community or were placed there in early life. Sexual intercourse was begun as early as the tenth year, and was followed by the early appearance of the menses. In the table which was given one of the cases menstruated at ten years, eleven at twelve years, and twelve at thirteen years.

Among thirty of the childbearing women only eighteen children were born during the communistic life, and there were four miscar-

riages which were not artificially produced. In many cases sexual intercourse was indulged in seven or more times per week, sometimes to the discomfort and displeasure of the women. The diet of the women was principally a vegetable one. They complained little of the pains and aches from which so many women suffer, and there were few nervous phenomena—in fact, the health of the women was good.

No menstrual derangements were complained of, notwithstanding the excessive copulation. The average age for those who had completed the menopause was 48·7 years, the number who had passed through the menopause while living in the Community being eight. It was unattended by any unusual incident.

*The Menopause in Prostitutes*—The sexual excesses of professional prostitutes and women of loose character in general might be supposed to offer a profitable field for research with regard to the consequences of such excesses during the menopause. The

results, nevertheless, are disappointing, however true the general statement may be that irregular living and the practice of vice find their appropriate physical penalty.

A large number of such women have been under the professional care of the author from time to time, including women of all ages, all degrees of prosperity and success, as such things go, and all grades of depravity. It has been a matter of constant surprise, in not a few of these cases (certainly not in all of them), in view of the abuse to which most of them subject their genital organs, as well as the irregularity of their lives in general, that their menstrual history differed so little from that of women who live virtuously and respectably.

*Prostitutes very Susceptible to Disease.*—This does not mean that such women do not acquire disease; far from it, for sooner or later the majority of them do acquire syphilis, gonorrhœa, or both. They also suffer almost invariably with endometritis, sometimes with only a simple catarrhal discharge, and some-

times with uterine hæmorrhage. Pelvic peritonitis is very common among them, especially among the more degraded, who are less careful and particular about personal cleanliness than others, and by whom also their degrading occupation is constantly practiced, regardless of the presence of menstruation, gonorrhœa, syphilis, or anything else.

*Certain Diseases very Common among Prostitutes.*—The fact that such women suffer extensively from venereal disease has, of course, been recognized from time immemorial. The particular disease of the tubes and ovaries which results from the infectious element of gonorrhœa was first described by Mercier in 1849, who made many autopsies upon prostitutes in Paris and discovered this fact in the course of such labors. The fact has since then been verified many times upon the living and may be regarded as one of the most common consequences of a life of prostitution. This disease often runs a very prolonged course, and in some instances has been known to wear itself out or be recovered from spon-

taneously. Such cases have been seen by the writer, and the pathological phenomena are analogous in some respects to those which are often seen in cases of tuberculosis in which the disease is circumscribed and in which the products undergo degenerative changes. These cases are believed to be rare, however; certainly they have been infrequent in the experience of the writer.

*Serious Disease of the Genital Organs may result, also an Early Menopause.*—The irregularities of a prostitute's life are such as would naturally result in serious disease of one organ or another, the general resisting power of the individual being also weakened, and these conditions doubtless combine in at least a certain portion of these unfortunate individuals in abbreviating the menstrual life and bringing on an early menopause. In spite of the irregularities and excesses of such a life, however, there are some who tolerate such conditions with no apparent evil consequence from the physical standpoint. The shrewder and more careful

prostitutes frequently continue their business many years, and some of them save considerable amounts of money. Some of them marry and have children, though this is rare for women who have been prostitutes very long, and they eventually go through the menopause with an experience very similar to that of other women who are in a similar physical condition. They sometimes have fewer of the uncomfortable phenomena of the menopause than women who have always taken the best of care of themselves.

*The Experience of Prostitutes sometimes contradicts the Results which would ordinarily be expected.*—To predict a troublesome menopause for a woman who has been guilty of such sexual excesses as would reasonably warrant such a prediction is not in all cases in accord with the facts of experience.*

* A case may be mentioned of a woman who had kept a house of prostitution thirty years, marrying and bearing children in the meantime, suffering with syphilis and varicose ulcers, and with excessive obesity, but otherwise appearing to lead a very comfortable life physically. Another

*Sexual Abstinence and its Relation to the Menopause.*—The opposite view of this subject—that is, the influence of complete abstinence from sexual intercourse upon menstruation and the menopause—could best be furnished from the experience of such a community as that of the Shakers, with whom the custom prevails which is the very opposite of that which is characteristic of the Oneida Community. By the Shakers sexual intercourse is regarded as wrong and to be abstained from absolutely.

*Experience of the Shakers.*—The utmost pains was taken to procure information upon this subject; the Shaker communities throughout the country were corresponded with, but all requests for definite information were declined.

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woman, forty years of age, has kept a house of prostitution or has been associated with one twenty-five years. She had a misearriage at sixteen, has had syphilis, and has been addicted to the excessive use of morphine and alcohol. She appears to be well preserved, says she has no trouble with her menstruation, and would not know that she had a womb. Such cases might be multiplied in the experience of the writer.

*Shakers Noncommittal concerning the Sexual Organs.*—One correspondent stated that subjects relating to the genital apparatus were not to be thought of, still less to be talked about, among them. The only positive information that could be obtained was from the presiding officer of one of the principal communities, who stated that he knew that the women in such communities suffered with disorders as to their genital apparatus and as to their menstruation, but to what extent he was unable to say. He referred the writer to the superintendent or principal one among the women in his community, but she declined to discuss the subject.

### 6. Accidental Influences, Fear, Emotion, Grief, etc.

*Women more Sensitive to Impressions than Men.*—The average woman is at all times more sensitive to impressions than the average man, and there are certain periods in her career when this sensitiveness is intensi-

fied; for example, when she is menstruating and when she is pregnant.

*Sudden Intense Impressions may bring the Menopause.*—A sharp, sudden impression would, with many women, check menstruation at once, and with not a few women, the pregnant state being premised, it would bring on an abortion. Since the poise in such matters is so delicate it is easy to understand that an impression may be intense enough not only to check an existing menstrual flow, or cause the uterus to throw off the fœtus which it contains, but to produce permanent cessation of the menstrual flow and prevent any subsequent conception.

*These Intense Impressions may occur at any Time.*—Such a result may be accomplished by sudden news of a great calamity, intense fear, apprehension of impending catastrophe, grief, disappointment in love, indeed, the entire current of a woman's life may be changed by such an experience. Such an experience may occur at any age, and we may therefore see the menopause pro-

duced by sudden impressions in early life, at maturity, or at a time when in the natural course of events the menstrual habit would be near its limit. The study as to the cause of such far-reaching results is curious and interesting, but it belongs especially to the neurologist. It is strange that the nervous system should so dominate the body as to control, by an influence of a moment's duration, the entire subsequent channel of events of life.

## Statistics with Reference to Conditions bearing upon the Menopause.

*Statistical Data bearing upon the Menopause.*—While realizing that statistics are of uncertain value, since they can be twisted to prove almost anything or to prop up any statement, no matter how improbable, it has nevertheless seemed fitting that a work of this character should not be entirely void of such matter. Such statistics as are presented are offered, therefore, rather with the idea that the reader may draw such inferences and conclusions as may seem to him warrant-

able, than to support any theory which the writer may have. It is also believed that they will serve as a fair illustration of the conditions which attend the menopause in our heterogeneous New York population. They were taken from the records of the class in gynæcology, for the past few years, at the Out-Patient Department of Bellevue Hospital in New York. In so far as these data have a bearing upon the age question of the menopause they have already been introduced (see pages 93–102). They are here repeated with additional specific references upon which comment will be appropriate.

| Nativity. | Age. | Children. | Miscarriages. | Age when menses became irregular or ceased. |
|---|---|---|---|---|
| Ireland | 52 | 10 | 0 | 49 |
| " | 54 | 4 | 2 | 52 |
| " | 50 | 7 | 3 | 48 |
| " | 51 | 4 | 0 | 51 |
| " | 50 | 2 | 1 | 47 |
| " | 50 | 3 | 1 | 48 |
| " | 50 | 5 | 1 | 43 |
| " | 47 | 11 | 5 | 41 |
| " | 45 | 7 | 0 | 44 |
| " | 44 | 15 | 1 | 44 |
| " | 37 | 8 | 1 | 37 |
| " | 43 | 9 | 0 | 43 |
| " | 46 | 7 | 2 | 46 |

| Nativity. | Age. | Children. | Miscarriages. | Age when menses became irregular or ceased. |
|---|---|---|---|---|
| Ireland | 48 | 10 | 0 | 48 |
| " | 47 | 8 | 2 | 46 |
| " | 48 | 8 | 1 | 47 |
| " | 45 | 6 | 4 | 45 |
| " | 40 | 6 | 2 | 39 |
| " | 49 | 11 | 4 | 49 |
| " | 40 | 7 | 1 | 40 |
| " | 48 | 8 | 0 | 47 |
| " | 40 | 8 | 2 | 38 |
| " | 40 | 8 | 2 | 40 |
| " | 40 | 8 | 4 | 38 |
| " | 42 | 9 | 0 | 38 |
| " | 56 | 3 | 0 | 43 |
| " | 51 | 8 | 3 | 46 |
| " | 47 | 2 | 0 | 45 |
| " | 44 | 0 | 0 | 43 |
| " | 46 | 1 | 6 | 43 |
| " | 60 | 0 | 0 | 42 |
| " | 28 | 0 | 1 | 26 |
| " | 48 | 1 | 0 | 38 |
| " | 43 | 2 | 1 | 40 |
| " | 39 | 0 | 0 | 37 |
| " | 38 | 0 | 0 | 38 |
| " | 38 | 0 | 0 | 38 |
| " | 40 | 0 | 0 | 39 |
| " | 50 | 0 | 0 | 50 |
| " | 42 | 0 | 0 | 41 |
| " | 50 | 0 | 1 | 50 |
| " | 44 | 0 | 0 | 44 |
| " | 50 | 0 | 0 | 45 |
| " | 41 | 0 | 0 | 41 |
| " | 45 | 0 | 0 | 40 |
| " | 45 | 0 | 0 | 43 |
| " | 48 | 0 | 0 | 45 |
| " | 58 | 0 | 0 | 53 |
| " | 50 | 0 | 0 | 40 |
| " | 40 | 0 | 0 | 38 |
| " | 52 | 0 | 0 | 48 |
| United States | 52 | 3 | 2 | 50 |
| " | 54 | 5 | 0 | 46 |
| " | 52 | 10 | 1 | 52 |
| " | 55 | 7 | 8 | 53 |
| " | 42 | 6 | 1 | 41 |

| Nativity. | Age. | Children. | Miscarriages. | Age when menses became irregular or ceased. |
|---|---|---|---|---|
| United States | 46 | 13 | 0 | 46 |
| " | 45 | 17 | 0 | 45 |
| " | 49 | 10 | 1 | 48 |
| " | 43 | 6 | 2 | 42 |
| " | 48 | 6 | 0 | 48 |
| " | 30 | 7 | 0 | 30 |
| " | 39 | 8 | 4 | 37 |
| " | 40 | 7 | 0 | 40 |
| " | 45 | 0 | 0 | 44 |
| " | 44 | 0 | 0 | 44 |
| " | 50 | 0 | 0 | 48 |
| " | 49 | 0 | 0 | 48 |
| " | 54 | 0 | 0 | 48 |
| " | 40 | 0 | 0 | 40 |
| " | 46 | 0 | 0 | 46 |
| " | 40 | 0 | 0 | 40 |
| Poland | 43 | 6 | 4 | 43 |
| Germany | 48 | 10 | 2 | 48 |
| " | 54 | 10 | 0 | 46 |
| " | 47 | 8 | 3 | 47 |
| " | 47 | 9 | 2 | 45 |
| " | 44 | 8 | 3 | 44 |
| " | 43 | 0 | 0 | 42 |
| Italy | 46 | 9 | 1 | 45 |
| " | 45 | 9 | 1 | 43 |
| Belgium | 52 | 2 | 3 | 51 |
| England | 55 | 15 | 3 | 48 |
| " | 41 | 0 | 0 | 39 |
| Denmark | 45 | 0 | 2 | 45 |

Total, 85.

*Excessive Fertility does not, of Necessity, Precipitate the Menopause.*—These data show that excessive fertility does not necessarily precipitate the menopause, one woman who had borne 17 children still menstruating irregularly at the age of 45, another who

had given birth to 15 menstruating at intervals of six months at the age of 44, and another who had given birth to 13 menstruating at intervals of seven weeks at 46.

Of these 85 cases menstruation ceased or became very irregular with 21 at the age of 40 or less.

Such cases as the one in which the menopause came at 30, after the birth of seven children, are instructive and illustrative of the exhaustion of the reproductive force to which allusion has been made.

In the case in which the menopause occurred at 26 the cause of this early appearance could not be ascertained. The foregoing data were taken from the records consecutively, without any attempt at selection. In only two cases was there any observation which called attention to serious disease, one of them being a case of malignant disease of the uterus.

Of the 85 women there were 31, nearly all of whom were married, who carried no children to term, and only three of whom

had ever been pregnant. This large percentage of sterile women is to be regarded only as an incident, for the percentage in our population at large, whether native or foreign born, can not be nearly so great as this.

Among those who had borne children 1 had given birth to 17, 2 to 15, 1 to 13, 2 to 11, 6 to 10, 5 to 9, 11 to 8, 7 to 7, 5 to 6. This gives the large average of 9 to 40 women. Thus, with nearly 50 per cent. of the cases in this collection in which there is an average of nine children, and nearly 40 per cent. in which there is an average of nil, what could be satisfactorily proved or deduced?

*These Statistics are admitted to be of no Great Value for General Deduction.*—Even though the number of cases considered might be very much larger, it is doubtful whether the conclusions one might draw from them would be altogether safe for guidance, and hence such a method of arriving at the answer of questions which we are discussing

must not be accepted with too great a degree of reliance.

Of the cases in which menstruation was still an occasional occurrence at intervals of less than a year the intervals noted were 1, 2, 3, 4, 5, 6, 8, and 10 months. If there had been no recurrence of the menstrual flow for a year or more it was assumed that the menstrual function had terminated.

A series of 134 cases (including, however, many which are in the foregoing series) was studied with reference to the ailments which caused the patients to seek medical advice. Those conditions which were most noteworthy were as follows:

| Ailment. | No. of cases. | Age. | No. of children. | No. of miscarriages. |
|---|---|---|---|---|
| Urethral irritation | 1 | 55 | 15 | 3 |
| Endometritis | 1 | 48 | 4 | 1 |
| Cardiac lesion | 1 | 50 | 3 | 1 |
| Rheumatism | 1 | 50 | 0 | 3 |
| Perimetritis and cystitis | 1 | 49 | 3 | 2 |
| Bronchitis | 1 | 45 | 0 | 0 |
| Umbilical hernia | 2 | 47 | 11 | 5 |
| | | 78 | 0 | 0 |
| Cystitis | 1 | 43 | 6 | 0 |
| Leucorrhœa | 1 | 40 | 2 | 0 |

| Ailment. | No. of cases. | Age. | No. of children. | No. of miscarriages. |
|---|---|---|---|---|
| Lumbar neuralgia | 5 | 48 | 2 | 0 |
| | | 46 | 0 | 0 |
| | | 50 | 2 | 1 |
| | | 45 | 2 | 1 |
| | | 30 | 7 | 0 |
| Occipital neuralgia | 1 | 38 | 0 | 0 |
| Salpingitis (Fallopian tubes removed, immediate menopause) | 1 | 45 | 4 | 1 |
| Gastric catarrh | 1 | 42 | 3 | 0 |
| Dyspepsia | 1 | 54 | 0 | 0 |
| Anæmia and constipation | 1 | 38 | 1 | 0 |
| Nausea and tympanites | 1 | 53 | 0 | 0 |
| Tympanites | 1 | 40 | 8 | 2 |
| Dizziness | 1 | 48 | 3 | 0 |
| Heat flashes | 1 | 37 | 0 | 0 |
| Heat flashes, dizziness, and dysuria | 1 | 44 | 3 | 0 |
| Heat flashes, dizziness, tympanites | 2 | 43 | 0 | 0 |
| | | 42 | 9 | 0 |
| Intense pain in head and abdomen | 1 | 43 | 6 | 4 |
| Headache and palpitation | 1 | 44 (single) | 0 | 0 |
| Dysentery | 1 | 54 | 5 | 0 |
| Iliac pain and purulent vaginal discharge | 1 | 45 | 4 | 1 |
| Lumbar and iliac pain and leucorrhœa | 1 | 45 | 0 | 0 |
| Iliac pain, flatulence | 1 | 51 | 4 | 0 |
| Varicose veins | 1 | 40 | 8 | 2 |
| Metrorrhagia (possibly of malignant origin, menopause at 45) | 1 | 47 | 9 | 2 |

In this table are 35 cases out of the entire series of 134 in which the menopause had been completed or was in process of experience in which the ailment complained of was of sufficient definiteness to elicit attention in the clinical histories which had been

taken. In only one of them was there a suspicion of malignant disease, and in the great majority of them the ailment was, in all probability, quite distinct in its origin from the menopause.

*Percentage of Malignant Disease very Small.*—It is interesting that the percentage of malignant disease was so small, and if it bears any particular relation to the subject which is under discussion, it would seem to indicate the infrequency rather than the frequency of malignant disease in connection with the menopause. As a matter of fact, statistics aside, we know that malignant disease is not so very infrequent in the decade from 40 to 50. The menopause, however, as has been already remarked on several occasions, has little, if anything, to do with its causation.*

*The Percentage of Cases of Disease of the Alimentary Canal is Large.*—In about 25

* In contrast with the table on pages 175–176 the following group of twenty-two cases, from the author's private records, shows the great variability of statistics, especially

per cent. of the 35 cases analyzed the alimentary canal was more or less implicated, and in more than 40 per cent. the nervous system was involved, the preponderating phenomena being pain located most frequently in the

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when the numbers of cases studied are small, and also the futility of making general deductions from them. The percentage of serious cases in this group is very large.

| Nativity. | Age. | Age of menopause. | Children. | Miscarriages. | Disease. |
|---|---|---|---|---|---|
| United States... | 46 | 40 | 2 | 2 | Carcinoma uteri. |
| Ireland..... | 53 | 43 | 0 | 0 | Myoma uteri. |
| United States... | 50 | 45 | 5 | 1 | Cystoma ovarii. |
| " ... | 42 | 41 | 0 | 0 | Myoma uteri. |
| Germany..... | 53 | 45 | 3 | 1 | Carcinoma uteri. |
| United States... | 54 | 51 | 3 | 2 | Gall-stones. |
| " ... | 49 | 46 | 1 | 0 | Kolpokleisis. |
| " ... | 53 | 52 | ? | ? | Nephritis. |
| " ... | 54 | 51 | 7 | 0 | Retroversio uteri. |
| Germany..... | 48 | 47 | 5 | 0 | Myoma uteri. |
| United States... | 52 | 51 | 2 | 0 | Osteosarcoma sterni. |
| " ... | 45 | 43 | 0 | 0 | Hæmatoma lig. br. |
| " ... | 60 | 52 | 2 | 1 | Carcinoma uteri. |
| Ireland..... | 54 | 48 | 7 | 0 | Tumor abdominis. |
| " ..... | 50 | 43 | 2 | 0 | Myoma uteri. |
| " ..... | 48 | 47 | 8 | 0 | Menopause. |
| " ..... | 41 | 40 | 1 | 0 | Carcinoma uteri. |
| " ..... | 50 | 48 | 5 | 0 | Carcinoma uteri. |
| United States... | 44 | 38 | 2 | 0 | Salpingitis. |
| " ... | 50 | 49 | 6 | 3 | Menopause. |
| Germany..... | 55 | 53 | 2 | 0 | Cystoma ovarii. |
| Ireland..... | 50 | 37 | 2 | 1 | Hæmorrhoids et atrophia uteri. |
| | | 1,010 | | | |

Average age at the menopause, 46 years.

lumbar region and vasomotor crises—that is, the heat flashes to which multitudes of women are subject at some time or other during the progress of the menopause with varying degrees of discomfort. Ten of the 35 women, nearly one third, had been sterile, and only one had never been married.

*Such Statistics not Suited for formulating a Definite Disease of the Menopause.*—From these statistics—and they have been taken without any attempt at selection—a fair picture may be made of the phenomena which may accompany the menopause. It would evidently be impossible to build up a reasonable theory as to a definite disease of the menopause from such or similar data. Not a few writers have referred to "climacteric disease" as if the experience of the menopause might include a distinct pathological process. It is hardly necessary to say, after what has already been said, that in the opinion of the author no such pathological process exists.

### The Influence or Bearing of the Menopause upon Ovulation and Conception.

*The End of Menstruation does not necessarily signify the End of Ovulation.*—It does not follow because a woman has ceased to menstruate that ovulation and the possibility of conception are at an end, not even though she may have passed through many of the experiences which are the common accompaniments of the menopause, and which are so frequently an indication that fruitfulness no longer exists.

Some one has said that the enormous number of ovules in an ovary was an argument that ovulation continued from birth to extreme old age. Such an argument without anatomical basis would hardly require consideration.

*Ovulation means Exuberance as in Nature in General.*—Prodigal as Nature is in the supply of germs of this character, there is apparently the same allowance for waste that is seen in the reproductive elements of ani-

mal and plant life in general. The ultimate secret or reason for this no human being has found out. The researches of Dalton, which have already been drawn upon for an earlier chapter, throw some light upon the subject, and by references to cases quoted in Chapter II we see that the condition of the ovaries as to the power or function of ovulation varied much.

The absence of corpora lutea may be considered an evidence that ovulation has ceased.

*Details from Dalton's Series of Cases in Chapter II.*—In case II of the series referred to a patient who had died of phthisis pulmonalis at the age of thirty-three, after an amenorrhœa lasting six months, there was contraction and cirrhosis of the ovaries, with few remnants of Graafian follicles and corpora lutea, ovulation and the reproductive force being nearly obliterated.

In case III, in which death came at the age of thirty from waxy degeneration of the kidneys and disease of the liver, no men-

struation having occurred for eight months prior to death, the ovaries were condensed and atrophied and enveloped in old adhesions. In neither ovary were there healthy Graafian follicles nor corpora lutea.

In case IV, in which death occurred at twenty-one from cardiac disease and pulmonary œdema after amenorrhœa which had lasted ten months, there was atrophy of the ovaries, no corpora lutea, and only a few small Graafian follicles. Ovulation had terminated.

In case V, in which death occurred from meningitis at forty-three, one year after the last menstruation, there were no normal Graafian follicles nor corpora lutea. A few degenerate Graafian follicles had evidently been long inactive. The menopause had occurred at the proper time and the function of ovulation had ceased normally.

In case VI, in which death came at fifty-five from abscess of the liver and pneumonia, six years after the last menstruation, the ovaries had been reduced to connective tissue,

with nothing to indicate that ovulation was possible.

In case VII, in which death came at forty-five from rupture of an aneurism, there had been only one menstrual period during the last year of life. The woman had borne fourteen children. The ovaries were small and contained a number of Graafian follicles, but no corpora lutea. The follicles showed a tendency to collapse before maturity. Ovulation had probably terminated.

In case VIII, in which death occurred at seventy, the ovaries contained a few collapsed Graafian follicles, but no other evidence of ovulation.

In a case which was attended by the author in 1890 the patient was thirty-nine, had borne one child at twenty-five, and otherwise had never been pregnant. She was operated upon July 3, 1890, for pelvic abscess and peritonitis. The adhesions in the pelvis were dense and abundant, the right ovary had disappeared, the right tube was a mere cord of fibrous tissue, the uterus was small and atro-

phied, the left tube and ovary firmly united, surrounded by adhesions and converted into pus sacs. The ovary contained neither Graafian follicles nor corpora lutea, and there had been no menstruation for three months. There was no tissue in which ovulation would have been possible.

There are not a few well authenticated cases in which conception has taken place long after the menopause has transpired, and in some of them the pregnancy has continued uninterrupted until term and delivery. In others an abortion at an early month showed that the reproductive force was defective.*

* The mother of an esteemed colleague became pregnant and was delivered at term of a child who has proved in his twenty years of life to have been sufficiently endowed with vital force. Pregnancy occurred subsequent to the fiftieth year, several years after the menstrual flow had ceased.

A case is recorded in a recent French journal (1892), the particulars of which, unfortunately, can not be given, in which pregnancy occurred at fifty-nine. Another case was narrated to the author by a colleague, which had come under his personal observation and attention, in which there was pregnancy at the age of sixty, which continued to term, and which began fourteen years after the menses had ceased. Such instances as the foregoing are not isolated, but have occurred to many observers who have given attention to such matters.

*Ovulation may continue after Menstruation has ceased.*—From what has been stated in the foregoing pages it would appear probable that in the great majority of cases the cessation of menstruation signifies the termination of ovulation, the functional power of the ovaries having reached its natural limit. But it is also apparent that in exceptional cases ovulation may continue after menstruation has ceased, perhaps without noticeable or noteworthy phenomena, and in such cases pregnancy is not an impossibility. Should pregnancy occur the evidence would be *prima facie* that senile degenerative changes in the uterine mucous membrane had not taken place, for if the formation of a decidua were impossible the development of a fecundated ovum would be equally impossible.

ADDENDA.

OLIVÉ. Menstruaciones suplementarias; una forma rara, etiologia, tratamiento. Revista homeopatica. Barcelona, 1895, vi, 329.

STOCQUART. Cas de cessation tardive des règles. Archives de médecine et chirurgie pratique. Bruxelles, 1890, iv, 132.

Drentel. On the Climacteric Age of Woman. Akuscherka Briansk, 1892, iii, 109.

Müller. Influence of the Climacteric upon Fibromyomata. Archiv für Gynäkologie, xl, 2.

Tait. Myomata of the Uterus. Transactions, London Obstetrical Society, xxv.

## CHAPTER IV.

### THE PHENOMENA OF THE MENOPAUSE, NORMAL AND MORBID, AND THEIR DURATION.

*The Typical Menopause a Colorless, Uneventful Experience.*—It is a presumption which would seem perfectly reasonable and warrantable that there are myriads of women, away from the influence of doctors, perhaps where doctors are infrequent or inaccessible, who, having plenty of healthful occupation and little time or inclination for musing and brooding over physical ills and ailments, glide away from the menstrual function and menstrual life with as little disturbance and discomfort as they had when entering it—that is, they are conscious of nothing amiss in respect to this portion of their functional existence—and such women constitute the type

of that which the menopause ought normally to afford.

*Facility in obtaining Medical Advice may exaggerate the Evils of the Menopause.*—How large the number of such women may be, who can tell, for it is not the well who consult the physician, but the sick or those who think themselves sick. On the other hand, the majority of women who attain old age under the eye of the physician have more or fewer disturbances and annoyances during the years which mark the menopause, such annoyances varying from the flashes of heat, followed by perspiration, which come and go without warning and sometimes without apparent exciting cause, to the most profound vascular and nervous derangements.

*The Normal Menopause not a Dangerous Experience to Life or Health.*—The position is therefore maintained that there is a normal—that is, an uneventful—menopause, and that if there is no pre-existing foundation of disease, the menopause should not be considered critical in the sense that it is dangerous

to life or health. The savage and the average woman in civilized life who has lived out of doors or who is of an insensitive temperament, knows nothing, as a rule, from experience of the trials of the menopause. Does this prove the superiority of the savage state or the state of Nature from the physical standpoint?

*The Civilized preferable to the Savage State.*—It would perhaps be so considered if we adopt the reasoning and admit the arguments of writers like Rousseau; but there are compensations in civilized life for the ills which may accompany the menopause, and this compensatory factor, which makes civilized life preferable to the life of the savage or to the state of Nature, does not seem to have been appreciated by Rousseau in his writings which tended in this direction, notably in his celebrated essay (Émile) on education.*

* One is reminded, in this connection, of the remark which has been attributed to the late Henry Ward Beecher, that he would rather be an unhappy man than a happy flea.

The situation has been admirably covered by Braxton Hicks in the Croonian lectures for 1877, and with his usual felicity of expression:* "After the change is completed the system improves, the many irritations connected with menstruation and pregnancy are gone, and the changes in the individual show that many of the earlier troubles were functional without permanent lesion. The local irritations, engorgements, and fluxes, all the reflex symptoms—neuroses, vomiting, neuralgias, headaches—gradually pass off."

*Phenomena which are Common, others which are Infrequent.*—Perhaps it is not strictly correct to say that there are phenomena which are normal to the menopause. There are, however, phenomena which are common and others which are less common or infrequent. In the former the nervous and the vascular systems have a predominating influence. The vasomotor phenomena are pre-eminently conspicuous, and they are most noticeable in women of nervous temperament.

* Medical Times and Gazette, 1877, i, p. 411.

*The Individual's Disposition, whether Sensitive or Phlegmatic, determines in a measure the Phenomena of the Menopause.*—It is but a logical consequence that women who during their menstrual lives blush furiously at the slightest stimulus of one character and pale at an equally slight stimulus of another, should have the same vasomotor disturbances during the period of the menopause when the equilibrium of the forces of the body is unstable in so many cases. With phlegmatic women such disturbances are less common, and even should they occur their significance would be far less than with the supersensitive women at the opposite pole of temperament.

*Vasomotor Phenomena easily excited.*—The origin of these disturbances may be either central or peripheral—that is, there may be an exciting cause in the vasomotor centers within the cerebral cortex, the medulla, or the spinal cord, or the stimulus may come from without, the peripheral ends of the cutaneous nerves suffering irritation.

Works on neural anatomy and neuro-pathology should be consulted for the special pathology of the subject.*

*Vasomotor Phenomena due to an Explosion of Nervous Force.*—A mental suggestion, a draught of wind, a sudden emotion, violence of any character, or possibly a cause of which the patient has no clew, may excite the phenomena in question, the patient being suddenly conscious of an explosion of nerve force, a flash of heat about the face and head, and a minute or two later a profuse perspiration. In some cases, at least, this condition of affairs seems kindred to the aura of epilepsy, and like that phenomenon is not entirely explicable. It frequently leaves the patient rather weak, like any other discharge of nervous force, and like attacks of hysteria may be followed by a copious discharge of limpid urine.

Manifestly, both cerebro-spinal and sym-

* A very good consideration of the subject may be found in Ross's Diseases of the Nervous System. Wood, 1883, vol. i, pp. 214–220.

pathetic nerve elements are involved, and in the absence of any satisfactory explanation thus far, based upon exact investigation, it would seem possible to attribute it to disturbance in the molecular arrangement of nerve cells, which, it must be admitted, is but a meager and unsatisfactory statement. As the menopause progresses this condition may recur at longer and yet longer intervals, gradually fading away from the experience, or it may continue as an occasional visitor to the very end of life, even when life is prolonged to an unusual limit.

A number of distinct varieties or types of this condition have been observed.

1. That which is simplest of all, manifesting the heat flash which comes suddenly and seldom lasts more than a moment. Its modifications are the following:

2. Sweating.

3. Sweating and more or less pronounced chill or shudder, like a mild paroxysm of malarial fever.

4. Headache, which may continue long after the disappearance of the heat flash.

5. Melancholia and depression or mania.

6. Chilliness of the extremities.

7. Abundant discharge of urine.

8. Diarrhœa and congestion of the pelvic organs, with the addition, in some instances, of intense sexual ardor.

*These Types may be Distinct or they may interblend.*—These several types may be clear and distinct or they may interblend. Moreover, they do not cover the entire range of phenomena which are included in this complex condition.

### Gastro-intestinal Disturbances.

Less frequent than the vasomotor disturbances, but sufficiently common, and the source of considerable annoyance, though seldom of any real danger, are the gastro-intestinal disturbances. As they have been observed by the author they may be mentioned in the following order of frequency:

1. Constipation.

2. Intestinal or gastric fermentation with tympanites, gurgling, gulping, etc.

3. Loss of appetite with indigestion and the usual accompaniments of so-called biliousness—viz., furred tongue, offensive breath, muddy skin, scanty and light-colored stools.

4. Diarrhœa.

*Troublesome Phenomena of the Menopause may be the Result of Previous Bad Habits.*—These conditions are very often the result of the bad habits or indiscretions of the patients, and are usually quite amenable to treatment.

It would be strange, indeed, if women who have all their lives neglected or abused their stomachs and bowels should go through the change of life without disturbance, and troubles of this character will sometimes serve as a prelude to other and more serious ones which are entailed by neglect or improper treatment.*

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* The disturbed condition of the alimentary canal with tympanites, flatulence, and constipation has in very many instances given rise to a suspicion of the existence of preg-

## Anæmia.

*Anæmia signifies Poverty of the Blood.*—Closely associated with the vasomotor and gastro-intestinal disturbances is the condition of anæmia. Anæmia during the menopause does not necessarily imply great losses of blood any more than it does in young women who have just reached or just passed puberty, and with whom it is of common occurrence. What it really implies is poverty of the blood in red corpuscles, and consequently in hæmoglobin, iron, and oxygen. Of course, it sometimes signifies profuse hæmorrhages, as it likewise does occasion-

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nancy, and this has sometimes been insisted upon by the individual who was the subject of it, until such insistence, unduly prolonged, became ludicrous, the wish being father to the thought.

Mary, Queen of England, wife of Phillip II of Spain, is said to have been deluded by such a misunderstanding and miscalculation as the foregoing.

Unless the physician is entirely on his guard he is liable to make awkward mistakes, and perhaps be held heavily responsible in cases like these. Indeed, ignorance or error of diagnosis in times like the present, when the helps and means of information are so abundant, is not creditable and often is inexcusable.

ally in young women, and it may also be one of the chain of symptoms pointing to the presence of malignant disease in the uterus or elsewhere; but in the experience of the author this has been a somewhat rare coincidence.

*The Menopause is not especially Favorable to the development of Malignant Disease except in those who are predisposed to it.*—The object of this work, to a degree that is earnestly desired, is to dispel, if possible, from both the lay and the professional mind, the idea that there is any especial danger of the development of malignant disease during the menopause, excepting in those who have a predisposition to such disease, either by heredity or by virtue of a depraved condition of their tissues from other causes.

### Hæmorrhages of the Menopause.

*Hæmorrhages at the Menopause formerly regarded as an Essential Accompaniment.*—There is no feature of this subject which has given rise to so much of alarm and uncer-

tainty and to such erroneous conclusions as this.

It has already been stated that prior to the era when gynæcology began to be practiced in an intelligent and reasonable manner it was the almost universal custom to consider hæmorrhages which occurred after the childbearing period had passed as necessary and unavoidable, and this false notion, it is surprising to say, still prevails, to a certain extent, especially with the older generation of practitioners. This hæmorrhage marked the critical time and would cease when that time had passed, or it might result in cancer and death. What its cause might be was usually unknown, and very little was done to find out the cause or to overcome it. It was in this way that the ideas concerning cancer became associated with those which concerned the menopause.

*Such Practice counted many Victims.*— The relative harmlessness of great losses of blood during the menopause was an article of faith which was a suitable accompani-

ment to that doctrine which made venesection a cardinal principle in its therapeutic system. Such erroneous views have led to the sacrifice of untold victims.

We in these later days can appreciate heartily the pungent wit and satire of Molière in *L'amour médecin* and *Le malade imaginaire* as we think of the bleeders, pukers, and purgers of his time, their solemn consultations, their bombastic rhetoric, their infinite complacency, and their self-satisfying conclusions.

Of course, we are to understand by the term hæmorrhage in this connection a loss of blood far in excess of that which is ordinarily lost at the menstrual period, for only such a loss would excite unusual attention or alarm.

*Hæmorrhages may recur at Long or Short Intervals.*—This hæmorrhage sometimes recurs at intervals of a week or two, or there may be an interval of one or several months. If the intervals are long there is an increased formation of the decidual en-

dometrium—that is, the portion which the uterus is accustomed to shed—and necessarily increased vascularity. The breaking down of this tissue opens up an unusual number of vessels, and favors an increased outpouring of blood. If the intervals are short the hæmorrhage may be due to increased friability of the endometrial tissue, as Scanzoni has suggested, and also to a decided increase in that impulse by which, during the child-bearing period, the blood current is diverted to the pelvic tissues.

*Conditions Different from those which attend Ordinary Menstruation.*—The conditions regulating the coagulability of the blood are also different from those which obtain with the ordinary product of the menstrual period. The latter, as is well known, does not, under the usual conditions, become clotted, being influenced by its admixture with epithelial detritus and acid glandular secretion, while the blood which pours from the uterine vessels in the condition under discussion is often coagu-

lated like blood from any other part of the body. It is true, however, that when one has been weakened by frequent hæmorrhages, and the blood has become thin and watery in consequence, its coagulating elements are defective, as in anæmia under any other conditions.

*Such Hæmorrhages demand the Relief which Intelligent Treatment can afford.*— The foregoing remarks apply to great numbers of cases in which, with the exception of the local lesions of the endometrium, nothing of a morbid character can be detected. It is believed that it is eminently unsafe and unscientific to leave such cases to Nature's unaided efforts at relief.

The necessity for the thorough investigation of all cases is seen in the fact that hæmorrhages may be due to disease of the endometrium differing from that which has been mentioned, arising from myomata of the uterus or from benign or malignant disease of the adnexa or other structures contiguous to the uterus.

*Scanzoni's Theory and Objections thereto.*—Scanzoni's theory concerning the hæmorrhages of the menopause is that they are due to senile rigidity or friability of the endometrial vessels which are unable to stand the blood pressure. Such an hypothesis might be sufficient, as has already been admitted in some cases, but would not be of general application. A morbid process of such a character affecting the endometrial vessels would be likely to affect small vessels elsewhere—for example, in the mucous membrane of the nose—and any unusual exertion would be followed by their rupture and by free hæmorrhage. As a matter of fact, such hæmorrhages have not been observed to be of especial frequency during the menopause.

*Kisch's Theory.*—Kisch attributes the hæmorrhage to softening and relaxation of the uterine tissue with circulatory disturbance in the pelvic organs and obstruction of the vena cava ascendens, stasis in the vessels of the uterine walls and hæmorrhage being the result.

*Frank's Theory.*—Frank ventures the opinion that the hæmorrhages are associated with early and profuse menstruation, frequent and difficult labors, frequent abortions, and excesses in drinking.

*Hegar's Theory.*—Hegar very aptly says there is an absence of ætiological factors in some of these cases. Perhaps it would be more to the point to say, in such cases, that we do not know the cause of the trouble.

Another hypothesis of Hegar's is that the hæmorrhage is due to diminished pressure on the uterus in consequence of relaxed and flabby abdominal walls and uterine supports. But in how small a number of cases, relatively, does this exist! Furthermore, the fatty degeneration of old age appears usually only after the menopause is concluded and the hæmorrhages have ceased.*

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* Börner in his work The Menopause, frequently referred to in this book, has quoted the foregoing opinions, and the substance of them has been borrowed from him.

## Lesions of the Mind and Nervous System in connection with the Menopause.

Not a little has been written concerning the influence of the menopause upon the mind and nervous system. Cerebral congestion is, indeed, not an uncommon occurrence at this period, and may be due to the diversion of the blood current and to the fact that pelvic congestion and uterine discharge no longer take place with their accustomed regularity. But cerebral anæmia is also of frequent occurrence at this period, and there may be present a great variety of phenomena resulting from these opposite conditions.

*From West Riding Asylum Report.*—Merson has observed* that epilepsy, general paralysis, or atrophy may be modified during the climacteric. He believed that the condition of nervous irritability in connection with ovarian changes must depend on changes in the blood supply, or must be due to a change of nutrition in the nervous

* West Riding Lunatic Asylum Report, 1876.

centers which arises spontaneously, or else is induced by influences emanating from the reproductive organs. The blood supply to the brain may be increased, diminished, or changed by retention products during the climacteric. Or, if the cause of disturbance at this time be not in the blood, it may be in the ganglionic centers, influences being reflected from the abdominal ganglia to the brain.

*Hegar's Comments on the Nervous Phenomena of the Menopause.*—Hegar* refers to one hundred and twenty-six paralyzed women in Meynert's clinic, in nine of whom there were menstrual derangements, while in sixteen there was progressive paralysis which was apparently due to influences connected with the menopause. Hegar likewise thinks that diseases of the nervous system are next in frequency to those of the sexual organs during and after the menopause, the more prominent symptoms being hyperæsthesiæ, hyperkinesiæ, prickling and burning of the

* Handbook of General and Operative Gynæcology, p. 291.

skin, dizziness, pseudo-narcotism, uncertainty in walking, muscular weakness, sleeplessness, hemicrania, hallucinations, etc. The hallucinations may be of hearing, sight, smell, taste, or feeling, and may develop into progressive paralysis.

*Sexual Ardor of the Menopause.*—In women who are passing through the menopause the author has, in some instances, observed sexual ardor in connection with hallucinations and other nervous phenomena.

This observation is probably kindred to that which has been made by Thomas,* and in which attention is called to the hysterical symptoms (senile hysteria) accompanied with tympanites, which symptoms are sometimes seen in those with whom the climacteric comes unusually late in life.

Kisch† also has observed and commented upon the congestive conditions of the menopause which are associated with irritability

* Medical Record, December 6, 1879.

† Die nervösen Leiden in climakterischen Alter. Wiener Medicinischer Presse, 1876, xvii, 600, 644.

of the peripheral nerves and with sensitiveness of the sexual organs. He attributes the somewhat unnatural marriages which occasionally occur between elderly women and young men to such causes.

### Climacteric Insanity.

*Not a Definite Type of Mental Disease.*—The very great importance which attaches to the subject of lesions of the mind during the period of the menopause has suggested a particular consideration of the subject. It has even been proposed by a number of writers to dignify this condition by the term climacteric insanity, though it does not appear that the psychical condition is such as to establish a distinct type of mental disease.

Among those who have investigated the subject from the standpoint of the alienist may be mentioned Griesinger, Esquirol, Krafft-Ebbing, Guislain, Schlager, Skae, Merson, Morel, and L. Mayer.

*Griesinger thinks that the Melancholia of the Menopause has an Unfavorable Progno-*

*sis.*—Griesinger was of the opinion that psychical disease was, in some instances, benefited by the experiences of the menopause, but that in a greater number of cases it was made worse. If melancholia developed during the menopause he was accustomed to give an unfavorable prognosis.

Tilt has recorded 430 cases of psychical disease among 1,320 cases in which the phenomena of the menopause were analyzed. This number seems quite incredible in the light of ordinary experience with the phenomena of the menopause, but it is possible that in many of the cases the psychical disease was of so mild a type as to be overlooked by any except an unusually keen observer.

*In most of Skae's Cases the Type was Melancholia.*—Skae's opinion is that climacteric insanity includes an important natural group of conditions.* An analysis was made by this writer of 200 cases which were ob-

* Edinburgh Medical Journal, 1865, x, p. 703.

served in the Royal Asylum at Edinburgh, and in which the age of the greater number of the patients was between 44 and 51. In almost all the cases the form of insanity was melancholia, and in 107 of them it was very pronounced. Depression, insomnia, listlessness, delusions, suicidal and homicidal impulse, though the latter was a rare occurrence, were noteworthy symptoms, and most of the patients were asthenic, anæmic, and constipated. Demonomania was a common delusion, also fear of losing the soul. The duration of the disease was about four months in most of the cases, the recoveries amounted to 53·5 per cent, the deaths to 10 per cent, and there was one case with cancer of the uterus.

*Skae's Conclusions.* — The conclusions which were reached by Skae were as follows:

1. Climacteric insanity has peculiar features which are easily recognized.

2. It is one of the most curable forms of insanity in which melancholia is present.

3. It rarely continues longer than from three to six months.

4. It is rarely fatal except from suicide or when associated with organic disease.

5. The patient should be separated from her friends, carefully watched, and should receive suitable diet and narcotics.

*Skene's Opinion concerning Insanity at the Menopause.*—Skene, who has investigated the question of climacteric insanity from the standpoint of the gynæcologist,* is of the opinion that among the poor, at least, this form of insanity is associated with bad nutrition, which has also been accompanied with frequent childbearing and lactation. His opinion is, furthermore, that this form of insanity may be caused by organic disease of the uterus, or that the presence of the latter may retard recovery from the insanity.

*Analysis of Conklin's Cases.*—Conklin† has made an interesting analysis of 57 cases

* Archives of Medicine, 1880, iii, p. 1

† American Journal of the Medical Sciences, 1871, lxii, p. 365.

which were under his care at the Southern Ohio Lunatic Asylum. In 25 of the cases there was hereditary tendency to insanity, the disease progressing gradually, and in some cases being somewhat badly defined until the menses had entirely disappeared. There was mania in 5 of the cases, there was melancholia in 41; almost all the cases showed general debility; there was suicidal tendency in 26, this symptom usually appearing early in the morning and during the period of convalescence. There were 25 recoveries, 3 remained in the asylum in a condition of dementia, 4 died, and the termination in 15 remained unknown. With those who recovered the duration of the disease was not less than two months nor more than two years.

*Sutherland's Conclusions.* — Sutherland has summarized the relations of the menopause to insanity clearly and tersely as follows:*

* British and Foreign Medico-Chirurgical Review, i, 1874, p. 505.

1. Insanity occurring at the change of life is not usually caused by that condition *per se*, but is most frequently due to some other moral or physical cause coincident with that period.

2. It occurs most frequently at the age of forty-five years and two months.

3. Its onset is usually a year after the cessation of menstruation.

4. The married state does not predispose to it.

5. Neither does the number of labors which a woman may have had.

6. It takes the form of melancholia oftener than mania.

7. Climacteric insanity has certain symptoms which are characteristic.

8. The prognosis is favorable, more than 40 per cent of the cases result in recovery.

9. Its duration is usually more than three months and less than three years. Complete recovery seldom takes place in less than twelve months.

10. The treatment should consist of sedatives, aperients, and watchfulness.

*Merson's Conclusions.*—Merson has already been alluded to in connection with this subject, and his excellent contribution may be found in the report of the West Riding Lunatic Asylum for 1876.* The following data were taken from the report in question:

During a given period of four years 392 insane women between the ages of 25 and 40 were admitted to the West Riding Asylum, and 333 additional ones between the ages of 40 and 55. In 69 of the latter insanity had developed prior to the cessation of menstruation, while in 147 it developed during the progress of the menopause.

The menopause was not alone responsible for the insanity in these cases, additional causes being present as follows:

| | Cases. |
|---|---|
| Bereavement in | 15 |
| Cruelty on the part of the husband | 18 |
| Financial trouble | 5 |

* The Climacteric Period in Relation to Insanity.

| | Cases. |
|---|---|
| Fright | 6 |
| Disappointment in love | 2 |
| Remorse | 3 |
| Ill health and want | 4 |
| Uterine hæmorrhage | 4 |
| Fall and injury of the head | 3 |
| Fever and inflammation | 4 |
| Intemperance | 5 |
| Disease of the heart | 3 |
| Pulmonary phthisis | 4 |
| Organic disease of the brain, not related to the menopause | 31 |

In the 147 cases last mentioned 90 were married, 33 single, 24 widows.

With 43 a tendency to insanity was hereditary, with 49 there had been previous attacks, with 13 there had been recovery from such attacks during the puerperal period.

Excluding cases of organic brain disease, Merson divides the instances of climacteric insanity which he has analyzed into three groups, as follows:

1. Those in which there is simple depression without hallucination of the senses or intellectual derangement, and in which nervous irritability and hyperæsthesia are also present.

2. Those in which there is depression with emotional and intellectual disturbance, also hallucinations and delusions of a depressing character.

3. Those in which there are delusions of suspicion and persecution, hallucinations of the senses, and outbursts of excitement.

Merson differs with Bucknill and Tuke and also with Vanderkolk in their belief that the prognosis of this condition is a gloomy one. In his 147 cases there were 69 recoveries.

Rohé * has observed that mental disorders, especially melancholia, were very frequent between the ages of forty and fifty. With the degenerative changes in the sexual organs which are to be found in such cases there may also be associated hallucinations of hearing and smell, religious delusions, also delusions as to the digestive organs, delusions of grandeur, and pseudo-cyesis. He has not been able to satisfy himself that there is any

* Climacteric Psychoses. Medical Standard, Chicago, 1896, xviii, p. 69.

period in the life of men which corresponds with the menopause. The insanity which sometimes follows removal of the ovaries is, in his opinion, identical with climacteric insanity, and he has found that the prognosis for this condition was favorable in 40 to 60 per cent of all cases.

Matusch * has found that the two critical phases of life in women were appropriate for the development of psychoses and hereditary and degenerative neuroses. In the asylum at Sachsenburg there were 551 insane peasant women who came under his observation, and of this number there were 60 who were passing through the menopause.

Braxton Hicks † calls attention to the power of the reflexes from the uterus and ovaries, and to the increased sensitiveness of woman compared with man. He concludes from this that woman should be expected to show the greater tendency to mental derangements and disorders. He refers also to the

* Allgemeine Zeitschrift für Psychiatrie, xlvi, S. 4.
† Medical Times and Gazette, 1877, i, p. 411.

statement of Mayer that among six thousand insane women and girls who had been seen by him in Berlin there was a percentage of 81·03 in which menstrual disorder of one character or another was complained of.

*The Mind is in Unstable Equilibrium at the time of the Menopause.*—The foregoing evidence shows at least that mental and nervous troubles play an important part in the history of the menopause. This relation is in many cases a merely accidental one, and it does not appear that any one has demonstrated or even tried to demonstrate that there were specific lesions peculiar to the insanity which occurs at this period. Without doubt the mind and nervous system are at this time in a state of unstable equilibrium, as was observed in one of the preceding paragraphs, especially in the case of nervous and supersensitive women, and it is easy to understand that an existing lesion might at such time be intensified or a weak mind be thrown entirely off its balance.

The relations of the ovaries to the mental

condition were at one time supposed to be so intimate that Goodell,* Battey, and others anticipated that they would be able to cure insanity in general by the removal of those organs irrespective of their apparently healthy or diseased condition.

Such theories were soon found to be futile in practice, and the theory and practice were both quickly abandoned.

Rohé has shown, however, by a not inconsiderable experience, that if mental disease coexists with decided lesions of the ovaries the removal of the latter may be of service in relieving the former.†

## Lesions of the Skin which may Accompany the Menopause.

*Common Lesions of the Skin during the Menopause.*—There are certain well-marked lesions of the skin which are of common oc-

* Transactions of the Pennsylvania Medical Society, 1881, xiii, Part II, p. 638.

† For further testimony upon this interesting question one may refer to Braxton Hicks, Medical Times and Gazette, 1877, i, p. 411; Barnes, Lancet, 1, 1873, p. 585.

currence in the history of the menopause. The blushing or erythema which comes and goes so frequently and mysteriously, and which has already been referred to with sufficient definiteness, may be considered the most striking member of this group, while less noteworthy is the pronounced pallor which is observable in the anæmic cases.

Rohé's * observations upon this subject are of great interest and demonstrate the great variety of skin affections which may occur while the menopause is in progress.

*Pigmentation, etc.*—Grellety † reports a peculiar case in which dark pigment discolored the entire cutaneous surface of a woman of fifty-seven whose menses ceased at fifty-five, the exudation into the skin apparently taking the place of the customary menstrual flow. The same author has observed pseudo-lipomata, chronic œdema, and numerous eruptions indicating disturbance of the circulation.

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* American Journal of Obstetrics, 1888, p. 1094.

† Wood's Medical and Surgical Monographs, vol. iii, July, 1889, p. 1.

Martineau * has also observed deposits of pigment and glandular disorders, chloasma, etc.

Similar phenomena have been observed and recorded by Kaposi, Brett, Cazenave, Hardy, Guibout, Rayer, Leroy de Méricourt, Grisolle, and Brierre de Boismont.

*Eczema Genitalium.*—Deligny is quoted by Grellety † as responsible for the opinion that eczema genitalium was almost peculiar to the menopause.

Such an opinion does not correspond, however, with the experience of the author, this disease having been observed by him at nearly every period of life, as well when the menses were present as when they were suppressed or had been superseded. It has been observed by him many times in a very aggravated and troublesome form in old women many years after the cessation of the menstrual flow.

*Skin Lesions upon the Breasts.*—The skin

* Diseases of the Uterus, p. 104.

† Concours Médical, April 14, 1888.

upon the breasts is occasionally the seat of most annoying pruritus during the progress of the menopause, and neuralgia or mastodynia may be associated with it. Paget's disease of the nipple may begin at this period of life, but in most cases it comes at a more advanced age.

In addition to the foregoing there is quite a mass of other literature which is devoted to this subject, which has been contributed by Alibert, Danlos, Jacquemier, Courty, and Potain.

Lesions of the skin may therefore be regarded as among the essential phenomena of the menopause, though it is important to differentiate those which are closely associated from those which are merely accidental.

### Lesions of other Parts or Organs.

*Incidental Relationships to the Menopause.*—It will be evident from the foregoing remarks that the relation between the menopause and diseases of the nervous system and

the skin is often very intimate, and the relationship must be closely studied in order to conduct the menopause to the most favorable issue possible.

There are other lesions in which the relationship to the menopause is not so intimate, in which, moreover, it is apparently accidental or incidental, but in which it is also sufficiently prominent to excite attention and call for consideration in connection with this discussion.

In a previous chapter this matter has been alluded to in some of its bearings. Asthenopia has been occasionally observed in women who were passing through the menopause, these women having been free from this trouble prior to the menopause, and experiencing relief from the same when the menopause was terminated.

Higgins * has reported nine such cases in women between the ages of forty-four and fifty.

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* British Medical Journal, 1878, ii, p. 557.

Stolz * has recorded his observation of the peculiar tendency of women passing through the menopause to vomiting, dyspepsia, jaundice, constipation, hæmorrhoids, rheumatism, asthma, and bronchitis.

*Cardiopathies.*—Cardiopathies are of frequent occurrence during this period, as might be expected in view of the vascular lesions which are so common, and which have been referred to heretofore.

While there is no particular reason for supposing that lesions *de novo* are excited by the processes which are in course of development, there is ground for the belief that pre-existing lesions are sometimes intensified, somewhat as is the case during pregnancy, though not from the same causes and conditions, of course.

Clément † divides the cardiopathies of the menopause into two groups:

1. Those which exhibit all the symptoms

* Nouveau Dictionnaire de Médecine et de Chirurgie Pratique, sub Menstruation.

† Lyon Médical, 1884, p. 433.

of profund perturbation of the cardiac function with no physical signs of valvular lesions.

2. Those in which there are signs of valvular trouble, which is first seen during the menopause and, as Clément believed, under its influence.

In none of the cases which has been seen by the author was there previous history of heart disease or rheumatism. The prominent symptoms in these cases were palpitation, dyspnœa, syncope, and weak pulse, the latter running from 150 to 160 beats per minute.

These symptoms recurred in paroxysms. Similar phenomena have been observed by Kisch, Groedel, Moon, and Stokes.*

Tachycardia has been observed by Baldwin,† and he believes this symptom is especially liable to occur when the menopause is artificially induced.

*Other Lesions which are probably attribu-*

* Diseases of the Heart and Aorta.

† Brooklyn Medical Journal, 1895, ix, p. 698.

*table to Old Age.*—In addition to the lesions referable to the heart there have been observed in the cases which are under consideration an increase in the excretion of carbonic acid, deposits in the urine of phosphates, carbonates, sulphates, and uric acid, ptyalism, diarrhœa, an engorged portal circulation, and jaundice. If this series of symptoms may seem somewhat incoherent, it is vouched for, nevertheless, by some of the most distinguished observers of the last generation.

Other lesions which have been attributed to the influences of the menopause, but which would seem to the author to be due rather to the degenerative changes which accompany the onset of old age, are atrophy of the spleen, the lymphatics, Peyer's patches, thickening of the boundaries of the lymph spaces, etc.

Changes in glandular activity in general may be expected at this period of physical development, increased activity being soon followed by a diminution of the same.

From the kidneys more uric acid and phosphates are eliminated, and albuminuria may be present without necessarily implying serious lesion of the kidneys.

*Increased Susceptibility to Disease at the Menopause calls for Increased Watchfulness on the part of the Physician.*—The function of the lungs may also be deranged. In a word, while it is quite possible that a woman may pass out of the childbearing period with no symptoms which could disturb her or give her serious inconvenience, it is equally possible that during the same period she might be the subject of a great variety of troubles. These troubles are not necessities, inevitables, but they are seen with sufficient frequency among civilized and highly bred women to make it incumbent upon the careful physician to keep a watchful eye upon his patients who are approaching the menopause, and to remember the increased susceptibility to disease which accompanies that period.

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## CHAPTER V.

### THE PREMATURE MENOPAUSE.

*Definition.*—By this term is meant that variety or form of the menopause which takes place more or fewer years in advance of the time when it would be expected to occur as a natural and looked for experience. It is immaterial to our present purpose whether this end is accomplished with or without the intervention of art.

*Great Importance of the Subject resulting from the Development of Gynæcology.*—The development of the science of gynæcology has given this feature of our subject an importance and interest which it never had before. It has opened entirely new fields for observation and discussion, and while it is true that the menopause often occurred prematurely before it came to be produced artificially and

intentionally, it seems to have excited little attention, and its relations to the normal process were seldom if ever made a matter for thoughtful consideration and comment.

*Premature Menopause Unnatural.*—The premature occurrence of the menopause is unnatural, and is therefore the evidence or the result of disease or fault.

*Like the Natural Process its Phenomena vary.*—It may resemble the natural process in that no noteworthy incident may accompany it; again it may show all the vagaries which are encountered when the menopause comes at the time of life when it is usually looked for. Temperament and surroundings have much to do with it, just as they have with the mature process.

*Involvement.*—The disease which will induce the early occurrence of the menopause may be constitutional or local; it may involve primarily the nervous system, the vascular system, the lungs, the kidneys, the glands, the genital apparatus collectively, or only a portion of the latter. Climate has a potent

influence in the matter, so have heredity, habit, and function.

*Effective Causes.*—Those who live in the tropics and mature early reach the menopause early also, though this rule has many exceptions. The same causes are not always similarly effective in producing the end in question—in other words, the individual factor in the case is an important one.

*Menstruation often Independent of Integrity of the Ovaries.*—It is often a matter of astonishment that the sexual organs in women can be so thoroughly diseased without producing the termination of the menstrual function, and sometimes without even disturbing its regularity. It is certainly an evidence that menstruation is not necessarily dependent upon integrity of the ovarian stroma, perhaps not upon the stroma at all, for its continuance or termination, the nexus being in all probability in the vascular and nerve relationships.

*Influence of Wasting Diseases.*—Pre-eminent among the constitutional disorders and

derangements which cause an early menopause may be mentioned the wasting diseases, and of these tuberculosis is first in importance. There are some tuberculous women who have never menstruated at all; there are others who are regular at the beginning of their menstrual history, and when the disease gets well under way either stop menstruating abruptly or after a series of irregular recurrences.

*Amenorrhœa may be Conservative.*—It is useless to try and restore the menstrual function in such cases. It is often attempted, especially because the patients are wont to believe that with its restoration will come an improvement in their general condition. This idea is entirely erroneous, the cessation of bleeding being an attempt on the part of Nature to ameliorate the condition of those who have no blood to spare.

*Various Factors which induce Premature Menopause.*—An early menopause is also not infrequent with those whose lives have been irregular and characterized by excesses

of various kinds, like prostitutes, with those who have suffered from poverty, or whose lives have been embittered by grief, sorrow, or disappointment. Other causes are syphilis, the amyloid disease (Klob), various poisonous substances, phosphorus, alcohol, arsenic, opium, mercury, and ergot, acute diseases including typhus, typhoid, intermittent, remittent, and yellow fevers, septicæmia, and the acute exanthemata.

Excessive sexual indulgence will likewise hasten it.

The foregoing are conditions in which a relation of time, at least, coexists with the menopause; the relation of cause, evident in some cases, is not clearly demonstrable in all.

It may be affirmed, however, that in so far as these conditions impair nutrition they tend to produce the result in question, the blood current in the pelvic region being feeble in volume and tension.

*Obesity induces the Menopause.*—Another class of women with whom the menopause comes early includes those who are very fat.

This has not been generally recognized in medical writings, but has been observed by the author many times.* Fat women are physically inferior in many respects: they suffer with scanty and painful menstruation, and they are very often sterile.

*Premature Menopause in the Excessively Fertile.*—Women who begin to bear children early, and have five, six, or more in rapid succession, often have an early menopause. The reproductive force in such cases is exhausted. This is especially noteworthy in women whose lives are monotonous—with continued and severe labor. Kisch, Krüger, and Mayer have made the same observation. (See also Chapter III, page 136.)

*Venereal Diseases causing the Menopause.*—Diseases which involve the integrity of the genital organs may hasten the menopause. Mention has already been made of syphilis and excessive sexual indulgence;

* See author's paper on The Influence of Obesity on Menstruation and Reproduction in Young Women. Medical News, 1888, p. 172.

to these should be added gonorrhœa, which is responsible for a very large portion of the severe inflammatory disease of the entire genito-urinary apparatus.

*General Condition of the Nutrition one of the Principal Factors in Menstruation.*—It is the depraved nutrition of the body in general rather than the local disease itself, be it of the uterus, tubes, or ovaries, which hastens the menopause, for, as has already been remarked, the ovaries may be entirely disorganized, as far as their normal structure and relations are concerned, the tubes may be mere sacs of pus or dense masses of connective tissue, and the uterus may be entirely transformed as to the structure of its endometrium, so that the formation of a decidua would be impossible, and yet menstruation may continue without interruption.

### Premature Menopause resulting from Traumatism.

*Menopause from Injuries.*—Of course it is possible that injuries may be received in

various parts of the body—wounds, bruises, etc.—the influence of which may be reflected to the pelvic organs and determine the cessation of the menstrual function. Especially would this be possible if such injury were followed by prolonged illness, prolonged suppuration, or wasting and emaciation.

*Menopause from Sequelæ of Parturition.*—There are also not a few cases in which the menopause results in consequence of severe injuries attending parturition; for instance, cases in which labor has been prolonged, and sloughing and loss of tissue have resulted, or in which the same results have followed severe obstetrical operations. Those cases are less frequent than they used to be, thanks to the benign influence of modern gynæcology, for the development of that science has necessitated development, *pari passu*, in the science and art of obstetrics.

*Menopause surgically induced.*—The traumatisms to which especial attention is invited are those which are intentionally produced by the surgeon upon the uterus, tubes,

or ovaries, or all of them, with the knowledge and often with the desire that the menopause should result.

This aspect of our subject was not considered by Tilt and others who have written upon it, for the very good reason that such a short cut to the menopause was never heard of by them.

*Hegar, Battey, and Tait.*—It is a chapter in the history of surgery which reflects the greatest credit upon three names—Hegar, Battey, and Tait—and has been the means of conferring health and happiness upon thousands of suffering women. These three names are referred to in particular, because these men saw the inestimable advantages which were to be obtained by certain suffering women if the menopause were induced, while the handful of ovariotomists, including McDowell, Clay, Keith, Wells, Peaslee, Baker Brown, Sims, and a few others, did their noble work solely or mainly with the idea of saving life. All honor to them for their genius, their skill, their

humanity, which often produced their grand results in defiance of persecution and obloquy, and finally disarmed their opponents through the unimpeachable testimony of a great cloud of witnesses rescued from disease and death!

### Claims of Battey and Hegar as to Priority in suggesting the Artificial Production of the Menopause.

The idea of the inestimable value of the induced menopause occurred to Battey in this country and Hegar in Germany independently of each other and at about the same time.

Hegar states* that he performed his first castration† July 27, 1872, for the relief of intolerable dysmenorrhœa and ovarian neu-

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* Handbook of General and Operative Gynæeology. Cyclopædia of Obstetries and Gynæcology, vol. vi, p. 294.

† The Germans use this ungainly term to signify the operation for removal of the ovaries. Etymologieally it may be correet enough, for it means cutting or pruning. Pliny was the first to use the term, so far as can be ascertained, and it does not appear that Pliny's use of it when applied to animals differs from that to which we are accustomed, namely, the removal of the testieles.

ralgia, his patient dying of septic peritonitis. Battey's first operation was performed August 17, 1872, his express purpose being the induction of the menopause.

*Influence of the different Genital Organs in the Induction of the Menopause.*—In the majority of cases the removal of the ovaries is sufficient to produce the menopause. Tait laid great stress upon the importance of the simultaneous removal of the tubes; but Battey, who carefully followed for many years the clinical history of the women upon whom he operated, found no advantage in such removal as far as its influence in producing the menopause was concerned. In some cases, especially those in which troublesome tumors of the uterus were present, the menopause has not resulted until the uterus was removed.

## Indications for the Artificial Production of the Menopause.

*Cases for Induction of the Menopause should be selected with Great Care.*—Battey has well said that there is need of the great-

est care in the selection of cases for the production of the menopause if the existence of extensive lesions in the uterus or its appendages is wanting. Doubtless very many mistakes have been made in this particular by men of good intentions, and the lines are not yet so clearly drawn as to enable one to say precisely what cases require or will be benefited by operation and what ones will not. The table of indications which is given is therefore provisional and may require modification.

1. All cases in which there is extensive inflammatory disease of the ovaries or tubes, or both. If the tubes are removed the ovaries should be removed also, for, the tubes having been removed, the functional power of the ovaries is practically destroyed. If a portion of ovarian tissue seems intact, it will be better practice in the majority of cases, notwithstanding, to remove the entire organ. Resection has been advocated and practiced by numerous gynæcologists, but disease is prone to recur in the fragment which was

retained and a secondary operation is frequently required.

2. All cases in which the ovaries or tubes are the seat of new growths, whether benign or malignant. A tumor in the pelvis, of whatever size, is always a menace to life and health.

3. Cases in which ovarian neuralgia and dysmenorrhœa have become intolerable, especially if occurring in women who depend upon their own exertions for their living. The author has had no cases which have given him more pleasing and satisfactory results than these, but it is just this class of cases about which opinions are most likely to differ. Withholding an operation from a woman who suffers intensely on the plea that she will be unable to bear children is unworthy of serious consideration. In the majority of cases, if such women were able to bear children, the children would be feeble specimens with the poorest possible chances of receiving the care and attention they required.

4. Cases in which Cæsarean section has been required and in which it is absolutely impossible for the women to bear children through the natural channels. This will not be deemed good practice by all, especially by those who are fond of doing Cæsarean section. The wishes of the woman in regard to bearing children should have some weight, but the author, for one, can not conscientiously urge a woman to run a more or less decided risk of losing her life even to gratify the natural desire for offspring.

5. Cases of osteomalacia. The results of the operation for this rare disease have been very gratifying.

6. Cases in which the uterus is the seat of inflammatory trouble or new growth which is the cause of obstinate pain, hæmorrhage, or pressure symptoms which can be relieved in no other way. It is not infrequently necessary to remove the uterus with the appendages in such cases.

Insanity, epilepsy, etc., have been considered an indication by some writers, but the

propriety of such operations is doubtful if the insanity is the result of a brain lesion. Battey had cured but one such case out of five which were reported by him in 1887.*

### The Phenomena of the Premature Menopause, including those which accompany Operations for its Production.

*Menopause may be established Suddenly or Gradually.*—As already stated (p. 204) the premature menopause may be established abruptly, without any of the symptoms which so often indicate the progress of this condition, or it may be characterized by some or all of those symptoms. When it comes as an accompaniment of serious disease—tuberculosis, anæmia, chronic visceral diseases—the absence of menstruation alone indicates that it has occurred. It is as if the vital forces were all occupied in opposing the march of a deadly enemy. Explosions of energy and force which are so com-

* Transactions of the American Gynæcological Society, 1887, p. 253.

mon when the menopause comes at the usual time are wanting because there is no surplus of energy and force to explode.

*The Phenomena are usually the same as in the Natural Process.*—There are other cases which are equally without symptoms marked, like those which have just been mentioned, by an abrupt cessation of the menstrual flow and nothing more. Such may be the history of those who have suddenly become obese, and of some of those from whom the appendages have been removed whether the degeneration of the ovaries be complete or incomplete. With by far the greater number of women, however, the history is that of women who are going through the menopause at the ordinary period of life. But if the appendages have been removed the bleeding, if it recurs at all, usually lasts but a short time, other symptoms such as flashes of heat and various nervous and vascular phenomena continuing for varying periods of time.

*The removal of the Uterus may be re-*

*quired to induce the Menopause.*—There are some cases of bleeding fibroid of the uterus in which removal of the ovaries does not cause cessation of the hæmorrhage, and for such the removal of the uterus may become an ultimate necessity.

The changes which occur after the ovaries have been removed have been systematically investigated by Glaevecke,* also the changes in the organism after the removal of the uterus. After the ovaries were removed Glaevecke found that menstruation ceased in 88 per cent of cases either at once or after an interval, in the remaining 12 per cent the flow became scanty and irregular. Substitutional hæmorrhages (atopomenorrhœa) in other parts of the body were of rare occurrence. In 50 per cent of the cases menstrual molimina continued after the cessation of the flow. Flushing, vertigo, irregular sweating, leucorrhœa, etc., were of common occurrence, also atrophy of the gen-

* Archiv für Gynäkologie, xxxv, 1.

ital organs. Even in cases in which the uterus was enlarged by chronic endometritis or fibroids it returned to its original size or atrophied in most of the cases. The general condition improved in most of the cases, and in 42 per cent the women became obese. Sexual desire was usually diminished and in some cases it was extinguished. Psychical disturbances, including melancholia, were sometimes very prominent. It was believed that the artificial menopause was exactly similar to the natural one. In cases in which the uterus was extirpated the menstrual flow ceased, but in some cases the molimina continued a few months, probably as the result of recurring pelvic congestion. If the ovaries were not removed with the uterus they atrophied, though it was believed that ovulation continued until the menopause was concluded. The effect upon the body in general of removal of the uterus alone was not so profound as from the removal of the ovaries, and sexual feeling was rarely changed. In half the cases there was no psychical dis-

turbance, but in a third of them there was depression tending to melancholia.

To these opinions, which evidently resulted from careful and sufficiently extensive investigations and with which the author's experience has not brought him entirely into harmony, may be added the conclusions of Battey after fifteen years' careful observation of his own cases.*

Of the 54 cases operated upon by him, 33 were cured, 8 much improved, 5 little improved, 8 not improved. In 50 cases the menopause resulted, in 4 it did not.†

In almost all cases he believed that patients must pass through the varying experience of the menopause before the full benefit of the operation would be obtained, and this might require as long a time as three or even

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* See Transactions of the American Gynæcological Society, 1887, p. 253.

† It is to be remembered that the express object which Battey has in view in all the cases upon which he has operated is the production of the menopause. It is this which he believes will work the cure in cases which are curable by such an operation.

five years. Much would also depend upon a judicious selection of cases; of course, some patients would be incurable by any operation, and this would include some who had long been subject to vicious habits, to the use of alcohol, chloral, opium, etc.

He observed that in some cases there was an intractable pelvic neuralgia following the operation, which he thought was caused by pressure of the unabsorbed ligature upon the stump. This phenomenon has been observed by others, the author included, but the author thinks that this condition is by no means universally attributable to such a cause. Many such cases were formerly treated by him with electricity, with relief to the pain, at least for the time. The discouraging part of such treatment is the length of time during which it must be employed. Both patient and physician become weary of its use.

Battey did not believe that the removal of the Fallopian tubes had any influence upon the final result, either with reference to the establishment of the menopause or in the

final cure of the disease, except in so far as the tubes themselves were the seat of disease. In this respect he took issue with Tait, who regarded the tubes as the essential organs of menstruation aside and apart from their function as oviducts.

Important observations upon this subject of the changes which follow the removal of the ovaries have also been made by Hegar.* He called attention to the fact that the general structure of the body, pelvis, breasts, external genitals, sexual desire, and the mode of feeling are independent of the ovaries or only relatively dependent on them.

In young female animals spaying is followed by a more quiet temperament than ordinarily exists, a tendency to the deposit of fat, and cessation in the growth of all parts of the genital apparatus. He also made the very reasonable suggestion that one must not be disappointed if the menopause did not result at once in women with whom the habit

* Operative Gynæcology. Cyclopædia of Obstetrics and Gynæcology, vol. vi, p. 291.

of menstruation had existed many years with the recurrent molimina and turgescence of organs and tissues. He also admitted the possibility of the blending of the sexual types, with growth of hair upon the face, deeper voice, change of ideas, and of the mental and emotional life. This, just as in certain animals there were analogous changes, the peahen assuming the feathers and appearance of the male after ovulation had ceased, and the antlers of the doe becoming better developed. But Hegar avowed that he had never seen the assumption of this masculine type in those whose ovaries had been removed. With this experience of Hegar's the author concurs, and it would seem to him that if the condition in question were ever to occur it would be in the case of women whose ovaries were removed at a time remote from that in which the menopause would under ordinary conditions take place.

It is an agreeable thought that with many women beauty becomes more pronounced

with advancing age; coarseness of features is an event far from common in its occurrence with those whom we have known and loved, and we readily admit that the type of beauty is not that of youth.

*The Menopause is Premature when occurring Prior to the Fortieth Year.*—The author's experience with those who have reached the menopause prematurely has not been inconsiderable, either in public or in private practice, and it extends over a period of more than sixteen years. In the class of cases which has come under his observation in the city of New York and its surroundings he has been accustomed to regard the menopause as premature if it occurred prior to the fortieth year.

Of those who have reached it as the result of wasting disease the rule has been, as already stated, that the only prominent symptom was the cessation of menstruation.

*The Obese suffer considerably, as a Rule.*—The obese who have suffered with dysmenorrhœa and sterility, and the obese who

have become so after bearing a large family of children, almost invariably suffer with the vasomotor troubles, to which attention has so frequently been called. Several cases have been observed in which an early menopause was reached, the patients being unconscious that it had taken place; the fact was casually determined while investigating the condition of the patient for other troubles.

*Removal of the Appendages of One Side does not induce the Menopause.*—A great number of cases has been seen in which the menopause has followed removal of the uterine appendages, and the observation of these cases has been continued during months and years. They have included not only the author's cases, but those of numerous other surgeons. The following phenomena have been observed: If the appendages from only one side have been removed the menopause has never been observed to occur, and symptoms which have been attributable to the functional activity of the ovaries (e. g., uterine hæmorrhage) have not been alleviated by

the removal of one ovary, even though that might be seriously diseased.

*The Menopause may be deferred even though both Ovaries be Removed.*—If the appendages of both sides have been thoroughly removed the menopause has invariably occurred, excepting in cases of uterine myoma adherent to surrounding structures in which activity and vascularity were continued through this adventitious relation.*

*Concerning Supernumerary Ovaries.*—Much has been said at various times about the existence of supernumerary ovaries. The author has been skeptical as to their existence, or rather as to their functional power.

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* An exception has recently occurred in the author's practice. A woman twenty-six years of age was operated upon by the author in June, 1890, for ruptured tubal pregnancy. Both ovaries and tubes were removed as thoroughly as possible. The patient has menstruated ever since with perfect regularity until four months ago, when menstruation failed to appear and has remained in abeyance. She also has most marked vasomotor phenomena, and is apparently experiencing the menopause. She returned to the author on account of an enormous ventral hernia, which was operated upon, and nothing found in the pelvis to indicate that the previous operation had been defective.

At the last meeting (1896) of the American Gynæcological Society cases were narrated in which total extirpation of the appendages was supposed to have been performed, and the operations were followed by pregnancy and delivery at term. This is rather staggering to one's cherished convictions. The dilemma which is offered is that a supernumerary ovary existed, with, of course, some communication with the stump of the tube, or that the operations in question were defective and incomplete. In any event, it is difficult to see how an opening could be made in the stump of the tube, and at the proper place, for the ingress of an escaped ovum.

Arthur Johnstone offers a solution to the riddle in the statement that the Fallopian tubes have accessory ostia, and that one or more of them may reopen in the stump, especially if the tube were ligated with catgut.

Of the two cases reported by Gordon at the meeting in question the first can be readily dismissed, the evidence being entirely inconclusive that both ovaries had been

removed. In the second, in which the appendages were removed by Gordon, the explanation of the pregnancy is not easy.

In the great majority of cases the monthly bleeding has ceased at once; in some cases it has continued a few months; in none, with the exception of myomatous cases, has it persisted as long as a year after the operation.*

Atrophy of the uterus is considerable in most cases within a year from the operation. This is especially noticeable in middle-aged women. In young women, especially in the married and in prostitutes, atrophic changes are much less marked.

The author has never seen but one case in which any domestic unhappiness had been caused by the so-called sterilizing operation; this was in a young and wretchedly poor Russian Jewess who said, with tears in her eyes, some months after her operation, that her husband told her she was "no good" any

* See also in this connection the statements of Glaevecke, p. 246; also Dührssen Archiv für Gynäkologie, 1889.

longer, being unable to bear children, menstruate, or respond to his sexual ardor. But the author has often listened to a similar story from women who have not been deprived of their ovaries.

*Concerning Sexual Desire in its Relations with the Menopause.*—Much has been said against this operation which is under consideration because of its supposed effect in abolishing the sexual appetite. It is possible that the operation has very little to do with the sexual appetite. A woman who is without sexual ardor prior to an operation will not be likely to acquire it afterward; the operation does not create the desire. Those who are of ardent disposition will not be likely to lose it by the removal of the ovaries, at least not for months and years. In other words, young women will not be much affected as to their sexual desire, middle-aged and old women may lose it, and it is quite proper at such periods of life that they should.

The author has repeatedly interrogated

prostitutes who had been operated upon, and has never seen one who admitted that the operation had affected her in this respect. He has seen women with whom sexual intercourse was the cause of intense pain and dread who were entirely relieved by the operation, and were enabled to endure sexual intercourse without pain or dread. He has, on the other hand, seen middle-aged women who said their husbands had ceased to have intercourse with them long before they were operated upon, and had made no attempt to renew the sexual relation after the operation. He would therefore submit that the day has passed for any rational man or woman to urge the sterilizing or unsexing effect of the removal of the ovaries as a valid excuse in cases in which the operation is indicated. This is said with full consciousness of the power of human passion, and of the fact that it is a perfectly natural thing for women to bear children; but it is also urged that the sole function of a woman is neither the bearing of children, especially if she is unfit

to bear healthy children, nor the gratification of the sexual appetite, and it is a sad commentary on human nature and the quality of the love which men have for their wives when the present or prospective inability of the latter to gratify the sexual appetite of the former is held up as an excuse for withholding from them the advantages of a beneficent operation.

*Pain and Neuralgia not always Cured by removal of Appendages.*—In a number of cases a continuance of the pain and neuralgia, which formed an indication for operation, have been observed for a more or less prolonged period after its performance.*

This pain has always yielded to the influence of electricity (see page 249), though months of treatment might be required before it was permanently relieved. In most of the author's cases the vasomotor disturbances so common with the menopause at the usual period of life were present, but in some

* See also Battey's remarks upon this subject, p. 248.

of them, especially in very young women, nothing of the kind was complained of.

Only one case has been observed in which melancholia developed, and this was relieved after treatment which was continued about a year.

In the great majority of the cases in which the appendages have been removed by the author for salpingitis and ovaritis the relief has been prompt, complete, and permanent.

*The Effect of removing the Ovaries prior to Puberty has not been thoroughly investigated.*—The effect of removing the ovaries prior to puberty can not be stated with the definiteness which could be desired, for there is little testimony upon this subject which is available. The indications for such operations are fortunately very few and limited. If we were to reason from the effect of the corresponding operations upon animals we might expect such changes in the structure and bearing of the individuals as would render them disagreeably conspicuous among their fellow-beings.

*The Changes which occur in Eunuchs are Suggestive.*—The changes which take place in eunuchs are sufficiently well known, and there is no reason to suppose there would not be analogous changes in females if the ovaries were removed before physical development had been completed. So pelvic congestion having never been established, it would not be within the range of the probable that the changes which accompany its arrest, whether abruptly or gradually, would be observed. Nondevelopment of the genital structures, the breasts, and the external genitals would be expected, because there would be no functional use for such structures.*

* A case which bears somewhat upon the foregoing occurred in the author's practice, and is as follows: The patient was a small, illy-developed girl of fifteen when first seen by the author in 1892. The vagina was absent, but menstruation had been established, causing the development of an abdominal tumor extending nearly to the umbilicus. This tumor was evacuated by an incision through the rectum. Subsequently an opening was torn through the tissue between the rectum and the bladder and drainage effected. After a time the drainage tube was removed, and this was followed by closure of the artificial canal and a reaccumulation of menstrual fluid. An abdominal section was then

## Apparent Menopause occurring Prematurely.

*Cases in which Menstruation is Suspended, but may Return.*—In not a few cases in which the menstrual flow is suspended this suspension is only temporary. Attention has already been called to cases in which this was the permanent result of sickness or disease of varying character, in an earlier portion of this chapter.

In a certain percentage of cases in which no menstruation appears for a number of months Nature will provide for the return of

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performed, the ovaries removed, and in the course of the following two or three months, by a process of dilating and tearing, a substitute for a vagina was constructed about two inches long. After an interval of three years the following information was obtained: The patient has had exaggerated vasomotor phenomena, flashes of heat and cold, and sensations of perspiration upon her limbs. She has not gained in weight, her breasts are undeveloped, her voice has not changed, there is no hair on her face, and only a slight growth upon the pubes. She has pleasure and satisfaction such as is usual and proper in the society of young men. The vaginal passage is one inch and a half long and tapers to a point. General health excellent.

the flow at the proper time, but in other cases some assistance must be rendered. It would be easy to anticipate a further elucidation of this subject by recalling the condition in which the function was only in abeyance for the time, and for the benefit of the student it may be said that these cases must be carefully distinguished from those in which the cessation is permanent though premature. No unerring rules can be given for determining the one from the other; each case is *sui generis*, and must be studied on its own merits. Therefore a strict classification of such cases would be out of the question, and one must be content to mention conditions in which groups of such cases may appear.

*Menstruation may be Suspended a few Months and then return.*—Allusion has been made (page 137) to the influence which a heavy atmosphere (e. g., during a sea voyage) may have in suspending menstruation, many examples of which are to be seen in New York among our young immigrant women. It has been particularly noticeable among the

Irish and Swedes, usually among the unmarried, and especially among those who are anæmic and deficient in vitality. This suspension may last several months, perhaps as long as a year, and with the recurrence of vigorous health is almost invariably followed by the return of the flow. In anæmic women in general the temporary cessation of the menses is a desirable incident. It is Nature's call for the accumulation rather than the distribution of blood and blood-making elements. If the call is heeded the result will usually be returning health and re-established menstrual function. In these and all other cases of suspended menstruation one must never lose sight of the possibility of the presence of the pregnant state, and must not be beguiled by external appearances or the statements of patients.

In any case of suspended menstruation in which the condition causing it does not lead to a fatal result, whether the cause be any of those which have been mentioned, acute or chronic disease, or traumatism, we must ever

consider the possibility of restoration of the disturbed function.

*Attempts at Restoration may be Futile.*— In some cases all efforts in this direction will prove futile, in others they will be crowned with success, and the satisfaction in such cases is usually considerable to all who have been concerned with them. It is well enough to state that some cases are quite hopeless, and offer no prospect of any advantage from treatment of any character. Such are cases of great obesity, exhaustion from excessive childbearing or hard work, or excesses in alcohol and venery, and usually superinvolution; also the occasional cases in which there is defective development of the genital organs, and in which menstruation has never reached the condition of a mature function.

ADDENDA.

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Bruntzel. Vier Castrationen. Archiv für Gynäkologie, xvi.

## CHAPTER VI.

### RETARDED MENOPAUSE.

This term does not refer to those cases in which bleeding at irregular intervals takes place years after the customary flow has ceased. Such cases are not instances of retarded menopause, but of disease of the uterine structure, and may occur at advanced periods of life, perhaps many years after the regular menopause has occurred.

*Cases of Menstruation prolonged beyond the Fiftieth Year.*—There are exceptional cases in which menstruation seems to be prolonged beyond a reasonable limit—that is, beyond the fiftieth year—for it is clear, as has been already stated, that in temperate climates we may consider the decade between the fortieth and fiftieth years as the period in which the menopause occurs with the great

majority of women. In some families it seems to be usual for the menopause to be deferred beyond the fiftieth year without appreciable disturbance to the individual.*

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* An instance of this kind has already been noted in Chapter III, p. 101.

Petrequin, in an analysis of 60 cases of women who had passed the menopause, found 7 in whom it came between the fiftieth and fifty-fifth years.

Scanzoni believed that no women menstruate naturally beyond the fifty-third year.

Mayer (Exposé Statistique de la Menstruation dans l'Allemagne Septentrionale et Centrale) reports the delayed menopause in one women at 60, in 3 at 59, and in 6 at 58. In his analysis of 6,000 cases, most of the women being residents of Berlin, there were 115 who reached the menopause between the ages of 50 and 64.

J. Kennedy (quoted by Bõrner, *op. cit.*) knew of a woman who had a child in her sixty-second year, She began to menstruate at 13, bore her first child at 20, and between that age and 62 had 20 additional children.

Rodsewitsch (from Börner) collected from Russian literature, between the years 1872 and 1881, 11 cases in which children were born between the ages of 50 and 55.

Sutherland reports a case (British Medical Journal, ii, 1879, p. 774) in which a condition which he supposed to be a renewal of menstruation, after 8 years' cessation, began at the age of 59.

Orfila is said to have reported the case of a woman who had her first child at 47 and her seventh and last at 60, menstruation continuing until she was 99.

Mayer has correctly observed that uterine tumors may grow after the menopause has apparently occurred and cause

The author has recently seen and operated upon a woman of sixty-nine who suspected a renewal of menstruation on account of profuse hæmorrhages. The case was one of carcinoma of the uterus. He has seen other similar cases.

All cases of hæmorrhage from the uterus which occur late in life—that is, after the fiftieth year—should therefore excite suspicion of the existence of malignant disease, and should not be looked upon as a necessary accompaniment of the menopause or as a renewal of the menstrual function. If this fact is borne in mind many cases may be relieved which it has heretofore been the fashion to allow to remain untreated.

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uterine bleedings which may be mistaken for a renewal of menstruation. Such tumors may become fibro-cystic or sarcomatous and cause irregular bleedings, and this fact has been observed by Tait, Schorler, Börner, Gusserow, and others.

## CHAPTER VII.

### TREATMENT.

*Carefulness and Watchfulness requisite.*—What treatment is indicated for women who are passing through the menopause? Certainly the old method was radically wrong, which consisted in ignorant inactivity. To this extent it may be admitted that the period of the change of life is a critical time—namely, that it is a time to be watchful and active. That eternal vigilance which is the price of liberty may also serve a very good purpose in making one always prepared for any mishap which may occur during the menopause.

*Classes of Women with whom the Menopause should be Uneventful.*—The author believes, as he has already asserted, that the majority of women will not require to have

anything done by a physician during this period, reaffirming a proposition already enunciated, that a process through which every mature woman has to pass can not be expected to have abnormalities in all or even in the majority of cases. Among savage and barbarous women, among women who live out of doors and are inured to manual labor or exercise, the occasions will be rare indeed in which any aid from a physician will be required in order to meet the exigencies of the menopause.

*Classes of Women who suffer. The treatment is that of Symptoms.*—Among the nervous, highly organized, sensitive women who spend the most of their lives in the house, among those who are harassed with cares domestic and social, the fashionable and dissipated, among those who have suffered with pelvic troubles more or less of their lives, among many who have suffered from poverty or disappointment, the menopause will call for more or less constant attention, and it will be well to remember that we have no

definite disease, as a rule, to treat, but a series of symptoms.

*Vasomotor Phenomena the most Frequent.*—Let us first consider the treatment of those who are affected with nervous and vascular troubles, for this includes by far the greater number of sufferers at the menopause.*

The vasomotor troubles, blushes, flashes of heat with possible subsequent profuse perspiration or discharge of urine, which sometimes persist until advanced life, form the commonest of all symptoms and frequently appear with women who are in other respects in the most perfect health.†

Many of these women would scorn the idea of medical treatment or even advice for such a condition, but there are many others

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* See remarks on climacteric insanity, Chapter IV; see also Geber, Anomalien der Schweissdrüsen und ihrer Function, in Ziemssen Handbuch der speciellen Pathologie und Therapie, xiv, Heft 2.

† C. Liegeois recommends the use of atropia sulphate for the sweating of the menopause, which is sometimes very annoying. Révue médicale de l'Est, Nancy, xi, p. 460.

who are so annoyed by it that they seek relief. Such women should always pay close attention to the condition of the gastro-intestinal canal, their diet should be simple and wholesome; alcohol, spices, highly seasoned food should be abstained from; the bowels should be kept freely open, and, as such people are in very many instances constipated, a gentle purge, especially with salines, should occasionally—that is, according to the urgency of the condition—be given.

*Salines and Nervines.*—The so-called nervines, valerian, asafœtida, scutellarium, hyoscyamus, etc., will all be found serviceable occasionally. Another most important matter consists in encouraging free elimination through the skin by exercise, friction, and frequent bathing in water at a temperature of 60° to 70° F. Salt-water baths will be found a particularly grateful and efficient mode of treatment.

*Abstraction of Blood for Congestions of the Pelvic Organs.*—The author has alluded to the congestions of the genital organs, which are sometimes particularly distress-

ing in causing sexual excitement. He has known cases in which this was a source of great mortification to very worthy women. Such congestions are a valid cause for professional assistance. Relief may often be obtained by the abstraction of blood from the os uteri either with leeches or by means of punctures with a tenaculum or scalpel, an ounce or more of blood being removed. Vaginal douches with water at a temperature not exceeding 70° or 75° F. would also be found efficient, and the intelligence of such patients should be appealed to by a candid statement of the condition and the means required for its relief.*

*Profuse Hæmorrhages during the Menopause are an Evidence of Disease.*—The congestions of the genital organs which cause free hæmorrhage at the time when the menopause is supposed to be present should always receive investigation and explana-

* See in reference to this feature of the subject H. Ricord, Études sur les Troubles de la Sensibilité Génésique à l'Époque de la Ménopause, Paris, 1879.

tion. It is insisted, as has been insisted repeatedly, that they are not physiological, they are not normal, but are the evidence of disease. Excluded are those congestions and hæmorrhages which occur years after the menopause has occurred, which have heretofore been explained by many physicians as a renewal of menstruation, a second experience of the menopause, which explanation is absurd, for they always indicate disease, and, with those who are advanced in life, usually or often malignant disease.

*Vasomotor Paralysis may be a Factor in the Hæmorrhages of the Menopause.*—It is probable that there is in these menopause-uterine hæmorrhages the same element of vasomotor paralysis which occurs in other parts of the body, and that the uterine capillaries and their supporting connective tissue have less resisting power on account of atrophy and fatty degeneration processes which are going on than they have had in previous years. Hence whenever the vaso-

motor paralysis occurs the resulting hæmorrhage is much more likely to be profuse than when the tissues have the vitality of earlier years. The hæmorrhage is more profuse and more persistent if there is also a diseased endometrium or a neoplasm in the parenchyma of the uterus.

*Curettage.* — The treatment should be mainly surgical; the uterus should be dilated, the endometrium examined, a wire curette being carefully passed over its entire surface, first for diagnosis and then with sufficient force to break down and remove all diseased tissue if any there be, and this operation should be repeated if the occasion warrants. This is a more logical and rational procedure than tamponing the vagina, or even the uterus, previous exploration of the uterine cavity not having been made.

If an uterine tumor causes severe bleeding one may practice galvano-cauterization of the endometrium with the positive pole, and if this fails to be effective and there is

prospect of a troublesome future, hysterectomy should be performed.

*Radical Measures indicated for Cancer.*—Should cancer of the uterus develop at this time—and this is possible, for it may develop at any period of life—hysterectomy, usually *per vaginam*, is indicated at the earliest possible moment. Baker, Byrne, and others have had excellent results from the high amputation of the cervix for cancer, Baker using the scissors and cautery in his operations (several of which were followed by cures, the patients being alive and well from three to eleven years after the operations. See Transactions American Gynæcological Society, 1891), and Byrne using only the cautery. The author feels entirely convinced, however, that the radical operation, and performed as radically as possible, is the best for all cases in which the deadly disease is not too far advanced to make an extensive operation practicable.

*Drug Treatment for Hæmorrhage.*—The tampon will be available and useful in some

cases, and so will the astringent drugs ergot, hydrastis, antipyrine, iron, iodine, alum, etc. The first two of these are to be given in sufficient quantities by mouth, and the author has frequently given them in combination. The others are to be used locally in the vagina or uterus, or both. If they are introduced into the uterine canal, it is better to moderately dilate it first as the drug will thereby be absorbed in greater quantity and with correspondingly greater efficacy.

*Nerve Lesions of the Menopause are mainly of the Sympathetic System.*—The mental disease which has been considered in a previous chapter as an accompaniment of the menopause is in many cases but another manifestation (or perhaps a derivative) of vasomotor disturbance. In fact the purely cerebro-spinal lesions of the menopause are rare compared with those of the sympathetic system. The insanity of the menopause then is frequently due to cerebral congestion, and hence the greatest

benefit may sometimes be derived in such cases from depletive measures.

*Depletive Measures in Nerve Complications.*—They may be used in the following order: First, salines, until purging has been sufficiently free; second, vaginal tampon soaked in glycerin; third, abstraction of blood from the uterus or from the veins of the arm or leg. It is astonishing how quickly relief will come in some cases from such treatment. Other treatment for the insane will readily suggest itself in the form of careful diet and hygiene, avoidance of care and worry, if possible, cheerful surroundings, occupation which shall be diverting but not fatiguing. We have the testimony of Merson and other alienists who have been quoted that the prognosis of the mental disease of the menopause is often very good.

*No Special Treatment is Indicated for the Nerve Lesions of the Menopause.*—The author has no particular treatment to recommend as especially efficacious for the

neuralgias, paralyses, hysterias, and epilepsies of the menopause. They are merely incidents in its course and require the same treatment which would be indicated were the menopause not present. Therefore the reader is referred to the special treatises upon nervous diseases, or to those upon general medicine, to Ross, Hammond, Gowers, Strümpell or other reliable authorities for information upon this subject.

*Treatment of Cutaneous Complications External and Internal.* — The cutaneous lesions which are so often met with during the menopause are wont to have a very direct relation to it. Some of them have already been referred to in connection with the treatment of vasomotor disturbances. The acne, urticaria, erythema, and other morbid conditions of the skin are almost always susceptible of relief, and the treatment should consist of both external and internal measures. Itching surfaces may be bathed with a solution of bicarbonate of soda or lime water. If caused by a discharge from the

vagina the latter must be stopped before the itching will disappear. The indication is for astringents, and the author is in the habit of using a vaginal tampon moistened with glycerite of tannin—

℞ Acidi tannici . . . . . ʒj
Glycerinæ . . . . . ℥j

—or with a solution of silver nitrate, thirty or even sixty grains to the ounce, or with a two-per-cent solution of icthyol in glycerin. The condition of the stomach and bowels must also be interrogated and purgatives given if required. The abstraction of blood in the manner referred to will also be helpful with some of the cases in which the skin furnishes elements of complication.

Nothing new is offered for the complications which affect the kidneys, eyes, liver, spleen, alimentary canal, etc. Since they are usually incidental and not characteristic, they should be treated in accordance with the principles which would govern their treatment apart from the menopause. The

works on general medicine are, of course, to be consulted with reference to their treatment.

There is little additional which can be said in regard to the general treatment of those who are passing through the menopause. Those who are not sick, but think they are, must be disillusioned with gentleness but firmness. They must be assured that the process is a physiological one through which the great majority of women pass unharmed; and yet the unusual sensitiveness of both body and mind at this juncture must be fully recognized and proper caution enforced against all means which could destroy the sensitive equilibrium. Those who are sick must be treated upon rational principles, not by superstition or tradition; surgical conditions should be recognized promptly and promptly treated; and those which are susceptible of relief by drugs should receive remedies which are tried and reliable, not the nostrums and cure-alls of the quacks.

## Addenda.

Chéron. Traitement des Écoulements névralgiques de l'Utérus aprés la Ménopause. Révue medico-chirurgique des Maladies des Femmes, Paris, 1890, xii, 383.

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Dr. Stevens does not, in this work, present a treatise upon all the known facts relating to the etiology and therapeutics of the disorders considered. He has, to a great extent, confined the work to a discussion of the relation of ocular defects to the class of complaints known as "functional nervous diseases."

The relations of the accommodating and rotating muscles of the eyes, and of the perplexities arising from a want of harmony in the performance of the function of accommodation and of adjustments, are forcibly stated, and the author declares that, in the absence of harmonious action, "continual compromising adjustments must be made and great nervous perplexity must occur: for no sooner is one part of the adjustment corrected than the other is wrong." He illustrates this principle by several interesting but well-known facts.

The work takes up in order various forms of functional diseases, such as Cephalalgia, Migraine, Neuralgia, Chorea, Epilepsy, etc., and after a concise description of the main characteristics of each, brings each to the test of his hypothesis. A number of illustrative cases are introduced under each heading. Photographs from typical cases of neuroses are introduced, in which the striking changes of physiognomy resulting from relief of the tension of the eye-muscles in such cases is shown. Some of these contrasts are very remarkable, and fully confirm the statements made in the text.

In the general summary of treatment the author dwells emphatically upon the necessity of giving minute attention to the ocular conditions. He does not ignore other therapeutic measures, such as tonics, rest, change of air and scene, electricity, and other agencies known to exert favorable influences, but these measures, familiar to all students of nervous diseases, are too well known to require discussion in this work, and the author refers the reader to treatises of a more general character for the consideration of those agencies.

In the supplemental portion of the work the subject of refractive and muscular anomalies of the eyes is tersely presented. These subjects are treated in so lucid and practical a manner as to enable the general practitioner, who would like to make examinations of the eyes of his nervous patients, to accomplish it in a satisfactory manner. In the chapters on muscular anomalies very much that is new is presented. This work introduces the reader to anomalies of the eye-muscles in all directions, and it is claimed by the author that "insufficiency of the interni" is not only not the sole important anomaly of its class, but that it is not the one of the greatest importance. He has thoroughly systematized the study of this class of anomalies, in which respect he has certainly made a great advance.

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